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ABSTRACT

A digest about how higher education can use new telecommunications technologies, especially to reach students in off-campus settings, is presented. Seven issues of volume 3 of the newsletter "TELESCAN" include articles on special topics and descriptions of national initiatives involving applications of technology-based instruction in higher education. Also included are abstracts and annotated bibliographies based on periodical articles, which are organized under the technology they address: audio, video, or computer technologies, or combined technologies. Specific categories include: radio, telephone, teleconferencing, broadcast television, cable television, videotext/teletext, satellites, videodisc, videotape, computers, and interactive video. Brief reviews of a variety of books, research reports, and occasional papers are also provided, along with ordering information. Finally, information is provided on conferences, workshops, seminars, projects, and other events. Specific contents include: a discussion of the controversial proposal for reallocation of the Instructional Television Fixed Service spectrum band by the Federal Communications Commission; information on the potential of videodisc use in instructional settings; and the use of audio teleconferencing for instruction. An index to volume 3 is included. (SW)

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TELESCAN

The Digest of the Center for Learning and Telecommunications

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TELESCAN

SEPTEMBER/
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The Digest of the Center for Learning and Telecommunications VOLUME 3 ISSUE 1

A Videotext Primer

Reprinted with permission of Joanna Hanes, president of Joanna Hanes Public Relations, consultant to telecommunications and education institutions.

Videotext information and transaction services allow a consumer to obtain text or graphic data from a computer database for display on a terminal at his or her home or business. Several different communication channels can be used, including telephone lines and cable television lines.

A broadcast text and graphic system, *teletext* uses one-way communication channels to transmit data in a continuous cycle. Unused lines in the Vertical Blanking Interval (VBI) period of a broadcast television signal are used to send images by encoding information in the unused bandwidth. No reverse channel is possible over the air, so a continuous stream of pages is sent in sequence. The user's terminal waits until the page it has requested is transmitted, captures the page, and displays it.

Videotext uses telephone and cable lines and is interactive, via two-way communication line between a videotext terminal (or modified television set) and a central database. The database is established by editing information (both alpha-numeric characters and graphic images) on a keyboard and storing the pages of information in a computer.

Transmission between a user and the computer over telephone lines requires a modem to convert telephone signals to digital form for display on the terminal. A decoder attached to the user's television set accepts the digital data, stores one or more pages in a buffer memory, and displays these pages at the user's request. To obtain information, the user keys his or her selection into a calculator-type keyboard attached to the television set or terminal.

With the system's two-way capability, the user may also send a message to the computer or another user. Additionally, the gateway function permits the videotext computer to connect the user to other remote computers—expanding the amount of information available and allowing for transaction services such as home banking.

Three videotext systems are currently in use: Britain's Prestel, France's Antiope, and Canada's Telidon. The British and French systems are based on alpha-mosaic graphics (resembling tiny mosaic tiles), while Telidon uses more refined—and expensive—alpha-geometric graphics. The most advanced form of videotext graphics, alpha-photographic resolution, is currently too expensive for general use; however, with improvements in related technology, the feasibility of this graphics mode may not be too far off in the future.

Standards for compatibility between videotext communications systems are

continued on page 2

Electronic Text and Higher Education: Lessons from the United Kingdom

John Carey, New York University
(This article is based upon research the author conducted for the Annenberg/CPB Project. However the opinions expressed are solely those of the author.)

It is very easy to be confused about teletext, videotext, cabletext, and other forms of text-based electronic information. They have been described with extraordinary hyperbole in the popular press and many trade publications. Against this backdrop, a person who tries to present a realistic assessment of what electronic text represents for higher education as well as other services, can appear to be a stick-in-the-mud or worse, a counter-electronic-revolutionary. Further, electronic text represents a smorgasbord of services with a few similarities and many important differences. Teletext and interactive videotext are as different as a newsletter and a library. In addition, the popular recognition of words like teletext and videotext, and their association with "future" homes and schools, have led some providers of older services such as computer-assisted instruction and research databases to adopt the new terminology as their own.

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In this issue . . .

Public radio and colleges establish audio network for adult learners ..... **page 3**

New CPB grant extends research on interactive cable and instruction .... **page 5**

Report on EDUCOM's computer literacy project ..... **page 10**

Center offers overview presentation of telecommunications and higher education via audio teleconferences ..... **page 13**

SCAN

Dear Subscriber

This issue of *Telescan* brings you some interesting information about teletext and videotext—technologies that provide graphic information through broadcast signals (teletext) and over telephone and cable lines with interactive capability (videotext). Our reprint from Joanna Hanes, consultant to telecommunications and educational institutions, is a kind of primer on these forms of electronic text. It explains some basic features of these technologies and gives an overview of new developments that enhance their potential for educational and consumer use. A series of the most commonly asked questions and answers about videotext and teletext is also included.

For additional insight into the potential of electronic text for higher education, we are fortunate to have a feature piece by John Carey, associate professor in the Graduate Program in Interactive Telecommunications at New York University. Mr. Carey has been widely published in the areas of electronic publishing, as well as videodisc and home computers.

Carey's piece provides us with a historical background of the development and widespread educational use of teletext and videotext in the United Kingdom. He leads us through the development of Prestel, the British teletext system, and its variety of uses in schools and libraries throughout Great Britain.

Carey also draws inferences from the British experience in teletext and videotext as they relate to development of these technologies for higher education in the United States. He reviews the need for flexibility of services, availability of transmission options, and intensive cost analyses.

He emphasizes, in conclusion, the need for careful planning and testing to determine an effective role for these technologies in our postsecondary institutions.

As always, you are welcome to contact us via the inquiry service for further information about the electronic text technologies in addition to the other areas we cover. Over the past several months, we have found that there is a need to limit the types of inquiries coming in the inquiry service. While we do have a wide range of information, we are not a totally comprehensive service and have found that some of the questions coming in are not easily answerable. In an effort to better serve you, we are making available the list of descriptors we have developed to date for accessing our data base. All you have to do is call or write us for this list, and we'll send it to you immediately. The list of descriptors should give you a more accurate sense of the types of inquiries we are best able to handle. And remember, we are still taking questions Tuesday and Wednesday afternoons, 1:30–4:30 (EST), at 202/223-3092 and 202/223-3093.

Finally, let me draw your attention to page 13 of this issue of *TELESCAN*. There you will find details on a new audio teleconferencing program we are launching this fall. Please read over the material carefully and if you are interested in participating, fill out the attached coupon. If you have any questions about this new service, don't hesitate to call us.

Sincerely,

Marilyn Kressel

Marilyn Kressel
Director
Center for Learning and
Telecommunications

Information in each section of TELESCAN is categorized using the following symbols:

Articles

Books

Washington-based activities

Programs and projects

Legal/regulatory issues

A Videotext Primer

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still in the formative stage. European nations have adopted a single standard known at CEPT to interconnect various systems. In the U.S., AT&T established a Presentation Level Protocol (PLP) with the Antiope and Telidon systems. A modified version of this protocol, the Presentation Level Protocol Syntax (PLPS), is expected to be adopted as the North American standard.

New developments (enhancements) in videotext technology are inevitable. The range of possibilities is almost limitless and includes improved transmission speed, text format and graphics resolution, hard copy, color, animation, speech, music, and full motion video. Advances in input, processing capability, storage, and database development are also expected in the coming decade. Companies entering the videotext field seek the maximum flexibility to incorporate technological enhancements as they are developed. Tomorrow's videotext service conceivably can be provided through less expensive terminals and with better quality pictures.

Industry Status and Projections

Q. What is the current status of videotext in the U.S.?

A. The momentum for videotext in this country is building rapidly. Although many technological and consumer acceptance questions remain to be answered, at least 60 U.S. companies have already spent an estimated $500 million on research and development in the videotext field. These include telephone companies, publishers, broadcasters, cable operators, bankers, retailers, and manufacturers of computer equipment and software. Industry assessments range from guarded optimism to enthusiasm.

Q. Which videotext applications are being tested in the current trials?

A. Most trials offer news, weather, and sports. Other services include advertising, program captioning, education, financial information, banking transactions, library information, directories, teleshopping, sending messages, entertainment, games, home computer support, personal files, and home security.

Q. How big is the videotext market?

A. By 1985, five million homes will subscribe to videotext, according to projections by International Data Corporation. Stategic, Inc., a San Jose consulting service, predicts the market will grow to 45 million homes (one-third of U.S. households) by 1990. AT&T's more conservative forecast estimates that eight million U.S. homes (seven percent) will

have videotext by 1990.

Q. What are future applications of videotext?

A. Widespread acceptance of videotext in the coming decade would open the way for a host of new applications. A recent technology assessment identified more than 50 potential applications:

Information—electronic newspapers, specialized newsletters, electronic encyclopedias, access to specialty databases, library catalog review, community bulletin board, transit/travel information, emergency information, government information, housing availability, comparison shopping, electronic hotlines, foreign language service, captioning, electronic directories, education course listings, computer-assisted instruction, special services for home-bound students, supplemental materials for educational TV programs, do-it-yourself training, literacy education, retraining, storefront medicine, first aid, electronic jukebox, on-demand TV, electronic yellow pages, supplement to TV advertising, classified advertising, and display advertising.

Transactions—electronic checkbook, electronic funds transfer, electronic credit cards, electronic catalogs, entertainment (electronic box office, travel agents), electronic mail, conferencing, electronic gossip, internal business communication, market research, video games, home computing service, personal information storage, financial management, telework (text editing, file maintenance, etc.), extended corporate management (work at home or off-site), inventory/stock control, home security, health and safety monitoring, and energy management.

Q. What major policy issues arise in the videotext field?

A. The mix of previously separate technologies (telephone vs. telephone and computers), as well as the variety of applications (including banking, mail, retailing, and news), produces a number of potential policy issues. As videotext develops, issues will concern standards, guarantee of access, competition, content regulation, and copyright. When videotext is widely used, attention will shift to questions of privacy and security, equity of access, consumer protection, industry structure, employment, and international trade and communication.

AUDIOSCAN

Articles, books, programs and projects involving the uses of audio technologies.

Radio

Gelman, Morrie. **"NPR's Money Woes Grow."** *Electronic Media,* June 2, 1983, pp. 1, 21. A report on National Public Radio's financial troubles.

Reitman, Judith. **"Market for Audio Services Looks More Promising."** *Cable-Age,* May 23, 1983, pp. 21-26. A look at programming, economic, and technical developments that are making audio packaging more attractive to cable operators.

Audio Network Delivers Courses for Adults

A major new effort to develop courses for adult learners using the medium of radio/audio is now in progress under the auspices of the recently incorporated Adult Learning Listening Network (ALLN). Composed of representatives from six colleges and university systems, along with public radio staff, the network draws upon the instructional and technological expertise of its participants to develop both credit and noncredit courses in a number of areas: degree-oriented credit courses, noncredit professional and vocational education courses, and self-improvement courses. Experts from appropriate academic fields as well as business, industry, and labor will be consulted during the course development process.

Research to date has convinced ALLN participants that the time is right for creation of such an entity. The flexibility and convenience of low-cost audiocassettes make them well-suited to the needs of the nontraditional adult learner for whom on-campus classes may not be a feasible or desirable option. The prevalence of car radios and tape players, combined with the numbers of people who commute to work, makes radio/audio a particularly accessible educational medium for students. These, in addition to such emerging technologies as audio teleconferencing, are just some of the reasons that the use of radio/audio as an instructional medium is worthy of further development.

The ALLN mission encompasses an ongoing assessment, development, production, marketing, and distribution plan designed to have a major impact on learner access to education. Materials will be designed for use as stand-alone courses or in modules and will be suited for delivery in formats ranging from self-paced to highly structured, depending on the needs and desires of the users.

Participating in ALLN are the California State University System, Central Piedmont Community College, Maricopa Community Colleges, Pennsylvania State University, University of Georgia, and University of Wisconsin, with support and funding from National Public Radio/Corporation for Public Broadcasting. The research and development phases of the ALLN project have been funded by a grant from the Corporation for Public Broadcasting.

Further information about ALLN may be obtained by contacting Brian Brightly at NPR, 2025 M Street NW, Washington, DC 20036; 202/822-2693. Information on ALLN courses may be obtained by contacting Yvonne Hancher at the University of California at San Diego, 619/452-3405.

Audiotape

Shea, Tom **"Computer Tutorials on Cassette Tape."** *InfoWorld,* July 4, 1983, pp. 21, 22. An examination of audiotapes as a tool for teaching people how to use personal computers.

Telephone

"Talkback Telephone Network: Techniques of Providing Library Continuing Education," by Ruth W. Wender, *Special Libraries,* July 1983, pp. 265-70.

The cooperative efforts of a state university, a state agency, and a hospital resulted in an unusual continuing education program for a variety of library personnel, including those in remote areas. The Oklahoma Talkback Medical Educational Network, which is hospital-controlled, shared its telephone network facilities, materials, expertise, resources, and staff with the University of Oklahoma Health Science Center (OUHSC) Library and the Oklahoma Department of Libraries.

The OUHSC Library, small public libraries, and hospital libraries had all felt a need for improved health-related information services, particularly for their nonurban clientele.

The statewide talkback telephone network was developed in the late 1960s to bring lectures via radio/telephone hookup to personnel at 110 cooperating hospitals, which are divided into five continuing education centers. In 1980, the network began to be used for library continuing education.

The OUHSC Library and ODL developed materials specifically for the telephone teleconference course, called "Solving Medical Reference Requests." Participants in the four-lecture course were hospital, academic, and public librarians, and continuing education coordinators. Course guidelines included:

1. Lecturers with practical experience must talk in a panel format for no more than 15 minutes without break, and answer questions quickly and to the point.
2. Reading materials must be clear, practical, written at the level of the participants, and include short assignments.
3. There must be a non-threatening measuring instrument.
4. All materials must be sent to participants beforehand, and sessions must be recorded.

Although there are certain library skills that can be learned only by doing, these programs offer a cost-effective approach.

VIDEOSCAN

Articles, books, programs and projects involving the uses of video technologies.

Broadcast Television

"Annenberg Funds Nine New U.S. Telecourses." *Open Line*, June 1983, pp. 4-5. A comparison of awards made for television courses in the U.S. with the course production system of the British Open University.

Behrens, Steve. **"Channels Reserved No More."** *Current*, June 7, 1983, pp. 1, 6. An account of the FCC decision to reallocate eight ITFS channels from education to commercial operators, while reserving existing licenses and pending applications.

Luskin, Bernard J. **"Telecourses: 20 Myths, 21 Realities. True Perspective Demands That We Do Not Deny Reality."** *Community and Junior College Journal*, May 1983, pp. 48-52, 60. A commentary on several perceptions about the use of telecourses for higher education.

McNeil, Donald and Milan N. Wall **"The University of Mid-America. A Personal Postscript."** *Change*, May/June 1983, pp. 48-52. A case study of the creation and demise of the University of Mid-America, a project based on the open university concept developed in Britain.

Smith, Ilene. **"LPTV: A Competitive Reality?"** *Cable Television Business*, July 1, 1983, pp. 46-50. A discussion of low-power service and its position in the marketplace.

"Status of Instructional Television Service." *NASULGC Green Sheet*, June 29, 1983, pp. 11-12. A review of the FCC decision to reserve ITFS channels for educational purposes.

"VideoIndex '83. Guide to Production Services." *Video Systems*, May 1983, pp. 33-82. A directory of video and audio production services.

Colleges Help Shape Adult Learning Schedules

What courses should be selected for future PBS Adult Learning Schedules? College and university faculty and administrators along with their colleagues in public broadcasting helped to answer this question by participating in the annual PBS Adult Learning Screening. This year's screening took place September 21 and 22. Participants evaluated more than 30 courses ranging in subject from geology to foreign language and will report their preferences to PBS in mid-October. The evaluation process is not simple; it requires consideration of academic quality, need, student interest, and other factors. The information provided by college and public television representatives is an important element in the formulation of future adult learning schedules.

All participants in the screening receive a special packet containing a profile on each television course. These profiles include a course description, program titles, and information on print materials. A segment of the television component of each course is fed via satellite to local public television stations, which make arrangements for interested institutions to view the video material. The program segments are organized by curricular area to facilitate viewing by faculty in specific academic fields; generally, academic administrators review all the offerings, so that they have an overview of the total spectrum of available programming.

The screening is one of the ways that colleges have input into the programming and activities of the PBS Adult Learning Service. Another opportunity is coming on November 9, with a national teleconference that will focus on the fall 1984 Adult Learning Schedule. The importance of this teleconference is threefold: It gives colleges ten months lead time to evaluate and plan to use the television courses of their choice; it provides colleges and stations with detailed information on each of the courses; and it offers colleges the chance to call in with questions about the courses, about the successful implementation of television course efforts, and about other issues of concern to them. A panel of experts will be available to answer questions during the teleconference and segments from each series in the schedule will be shown.

Colleges interested in participating in the teleconference, should call the adult learning liaison at their local public television station or the PBS Adult Learning Service at 475 L'Enfant Plaza SW, Washington, DC 20024; 202/488-5360.

National Project on "Adult Experiences"

Five universities are participating in the development of "Adult Experiences: Continuity and Change," a university-level instructional materials package being developed by the National University Consortium for Telecommunications in Teaching.

The two-year project, funded by the Fund for the Improvement of Postsecondary Education, has two primary

goals: to develop a television-assisted course for adult, nontraditional learners to be offered by the member institutions of the National University Consortium, and to evaluate a new way of engaging scholars in multi-disciplinary course collaboration. Faculty from the University of Maryland, Pennsylvania State University, University of Kansas, Duke University, and Rutgers University are participating in course development. Adele Seeff, associate director of the National University Consortium, is co-director of the project.

The project will take an integrated, multi-disciplinary approach to exploring the experience of adult life. To provide an accurate portrayal of the adult years, the project will bring together scholars from many fields, including psychology, sociology, counseling and psychobiology, history, literature, and instructional media.

The development of "Adult Experiences: Continuity and Change" comes at a time when the adult population in the United States is increasing rapidly, according to Dr. Seeff. "We realized that a course for adults, written by adults, was a must for this decade," she said on behalf of the course team.

When completed, the course will include a series of television programs, texts and readings, and a student study guide. The materials will provide the basis for a credit course to be offered by members of the National University Consortium.

For more information, contact Adele Seeff, National University for Telecommunications in Teaching, University of Maryland University College, College Park, MD 20742; 301/454-6627.

Cable Television

"Retraining: New Skills for Old," by Anna L. Henry, *Cable Television Business*, May 15, 1983, pp. 44-48.

A San Francisco-area school district has taken on the job of retraining displaced workers. The vocational/technical East Bay Skills Center, operated as part of the Peralta Community College District of Oakland, California, is the longest continuously operating program of its type in the country.

The Skills Center's Cable Training Program has been producing for 12 years professional cable construction workers, installers, and technicians, and consistently 95 percent of the graduates have found jobs in the cable industry. Most of the graduates are minorities and women, and they are in high demand.

The program has served as a prototype for programs across the nation. A significant feature is its strong support from local companies, including an industry advisory board made up of representatives of some 14 cable companies. The board helps the center by reviewing the curriculum, suggesting modifications as new technology dictates change, providing on-the-job training opportunities, and later, graduate placement.

Training at the center is conducted on a year-round, practical opening, open-exit basis. In 1983, between 75 and 150 students will be trained in specially funded projects, including an apprentice program to upgrade technicians currently employed with cable companies. The apprenticeship program—called the Moore Cable Program—is part of a state project to increase the number of minorities and women employed in technical trade areas of the industry. It will also help establish state apprenticeship standards in the California cable industry.

Retraining persons laid off in manufacturing areas is a key priority of the program. As a result, the Skills Center has set up special programs in basic skills and vocational counseling for the laid-off workers.

Behrens, Steve. **"Public Access (PTV Cousin) Not a Lost Cause in Cable Bill."** *Current*, June 21, 1983, pp. 1, 8. A report on legislation in the Senate that will protect public access to cable channels.

Booth, Ethel Greenfield. **"How Minority Programming Has Fared."** *Cable Television Business*, July 1, 1983, pp. 154-58. An analysis of program services for minority and ethnic groups.

Emmrich, Stuart. **"Newspapers Keeping Faith in Cable."** *Electronic Media*, June 30, 1983, p. 4. A look at newspaper publishers' ventures into cable experiments.

Hanneman, Gerhard and Robert LaRose. **"Cable Television: A New Business Communications Medium."** *Business Communications Review*, May/June 1983, pp. 23-29. An overview of cable institutional networks serving public and private organizations with business telecommunications.

Holcomb, Richard B. **"Community Involvement is Key to Cable Success."** *Broadcasting*, June 13, 1983, p. 32. A commentary on the need for cable operations to establish a positive community identity.

Leddy, Craig **"Brenda Fox."** *Cable-Vision Plus*, July 18, 1983, pp. 31-37. An interview with the vice president and general counsel of the National Cable Television Association on regulatory issues of concern to the cable industry.

Riordan, Suzanne. **"New Outlets Attract Homegrown Talent."** *Advertising Age*, June 13, 1983, pp. M-20, M-24-25. An overview of several communities working with cable operators to upgrade and experiment with public access programming.

Smith, Ilene V. **"Can You Profit From Professional Education?"** *Cable Television Business*, June 1, 1983, pp. 36-38. A discussion of professional education delivered by cable.

Swartz, Herbert. **"Business Communications and Cable Television."** *Cable Communications*, June 1983, pp. 17-24. A view of the services cable can provide for business communications.

Yovovich, B.G. **"Reaching for a New Identity."** *Advertising Age*, June 13, 1983, pp. M-9, M-44. A view of lessened optimism about the prospects and potential of cable television.

The Video/Cable Information Packet. American Library Association. Available from Library and Information Technology Association/Video and Cable Communications Section (LITA/VCCS), [American Library Association, 50 E. Huron St., Chicago, IL 60611]. 1983. $8.50 prepaid.

An information packet for libraries and those interested in video use in libraries. This kit includes a number of publications concerned with community access, cable regulation and legislation, guidelines for taping copyrighted programs, a national survey of libraries using video, and a bibliography of cable periodicals.

CPB Grant Furthers Interactive Cable Research

Two institutions leading the investigation into the potential of interactive cable television for instructional purposes will collaborate on a new research phase under a $125,000 grant from the Corporation for Public Broadcasting. According to Edward J. Pfister, president of CPB, "The grant to these two institutions demonstrates CPB's continuing interest

in both education and the development of new technology to support the nation's educational efforts."

The University of Nebraska-Lincoln's public television station, KUON, and its Division of Continuing Studies and San Diego State University's public television station, KPBS, and its Center for Communications will join forces to develop and evaluate production processes for education materials and uses of interactive cable. Each institution has worked on separate investigations during the past year, together representing the most extensive available examinations of use of the new technology for instructional purposes.

Cox Cable of Atlanta is continuing its cooperation in the new stage of the CPB grant project by offering educational programming and services on INDAX, an advanced interactive cable service. INDAX is in the business development stage with market programs continuing in the Cox Cable System of San Diego, California.

"This major new CPB grant allows us to extend our research begun last year on such videotext processes as simulation and gaming.... These applications have an important role in instruction and we'd like to test them further," commented Lee Rockwell, director of the University of Nebraska-Lincoln project and assistant manager for educational telecommunications at the Nebraska Educational Television Network.

Much of the research will be directed toward instructional applications of two-way interactive cable. In interactive cable, a viewer/student can turn on the television set and use a keypad to make choices and select specific textual information. A computer located in the cable operator's system processes and executes a viewer's request.

The University of Nebraska-Lincoln station, KUON-TV, has been actively involved with cable and public television. It also has been developing and producing interactive programs through its Videodisc Design/Production Group. The three pilot courses under development at Nebraska during the past year deal with the subjects of "Business Writing," "Comparative Foreign Governments," and "Marriage and the Family."

San Diego State University's station, KPBS-TV, has been a leader in experimenting with videotext applications for educational/instructional purposes. Its first interactive videotext project funded by CPB utilized the INDAX system for distribution of videotext materials while the video series was distributed on KPBS-TV 15. The Center for Communications at San Diego State University was responsible for planning and evaluation of the project.

In addition to assessing the benefit of interactive cable television instruction for different audience levels, ranging from children to adults, other goals of the new project will be to develop additional shorter units of instruction and to measure actual and "user perception" learning gain. The project is designed to provide public television with a clear understanding of potential participation in interactive cable technology.

Key project personnel from San Diego State University include overall supervision by Donald R. Martin, operations manager, KPBS, and project coordination by Kathleen Goodfriend, coordinator of telecommunications, KPBS. Lee Rockwell, assistant manager for educational telecommunications at the Nebraska Educational Television Network, is director of the University of Nebraska-Lincoln project.

Ground Zero and NFLCP Establish Access Network

Ground Zero and the National Federation of Local Cable Programmers (NFLCP) recently formed the first ad hoc national cable access network. The network of more than 40 cable access channels was developed for the cablecasting of "Thinking About Nuclear War," a ten-minute videotape produced by Ground Zero and NFLCP with a grant from the Field Foundation.

"Thinking About Nuclear War" features Roger Molander, executive director of Ground Zero, discussing two Ground Zero spring educational events—Firebreaks: A War/Peace Game and "What About the Russians?" week. The program is intended to be used as an introduction to locally produced segments on the two Ground Zero events.

"This is the first time a national organization has used access channels for educational and public information purposes nationwide. There have been isolated efforts on a state-by-state basis, but nothing of this magnitude," remarked Sue Buske, executive director of NFLCP.

The formation of this network marks a true grassroots effort to place the tape on local channels, and to produce local segments. Among the locally produced segments are a two-hour documentary on the Firebreaks game in Bloomington, Indiana; a talk show with the participants in Greeley, Colorado; and an edited taping of the game featuring the Sioux City-Iowa City Council.

Cable access provides a mechanism for people to express themselves on television, and Ground Zero has shown that it can be utilized. Molander explains the reasons his organization used access channels, "Education is essential for participating in the decision-making process, and we have been looking for ways of reaching the public with the nuclear war issue. Public access is a perfect vehicle to begin that educational process on the community level."

For more information contact Ground Zero, 815 15th Street NW, Washington, DC 20005; 202/638-7402.

Videotext/Teletext

Brenner, Elizabeth. **"A Look at Viewtron."** *Electronic Media*, May 19, 1983, pp. 1, 16. A description of the Knight-Ridder videotext service, the first national system.

Brenner, Elizabeth. **"Knight-Ridder Puts Video Future on Line."** *Advertising Age*, May 16, 1983, pp. 1, 44, 53. An examination of the Knight-Ridder videotext service and its advertising potential.

Emmrich, Stuart. **"Newspapers Keep the Faith in Teletext."** *Advertising Age*, June 27, 1983, pp. 1, 77. A discussion of several newspapers' ventures into delivery of teletext services.

Gupta, Udayan. **"Changes by Banks, Retailers Critical to Growth of Videotext."** *Electronic Media*, May 12, 1983, p. 10. An overview of several ongoing videotext trials and developments that will promote the growth of services.

Markoff, John. **"Microperipheral Launches Low-Cost Videotext System."** *InfoWorld*, June 20, 1983, p. 21. An announcement of a new, low-cost, microcomputer-based videotext system.

Mermigas, Diane. **"Decoder Production Slows Teletext Service."** *Electronic Media*, July 14, 1983, p. 123. A report on setbacks in the development of teletext service due to slow production of decoders needed to unscramble broadcast signals.

Mermigas, Diane **"Taft Starts Cincinnati Teletext Service."** *Electronic Media*, June 30, 1983, p. 15. An announcement of a public, nonexperimental teletext service.

Russell, Sally. **"Cable's Role in Videotex."** *CableVision*, July 11, 1983, pp. 38-43. A report on companies interested in two-way cable as a transmission method for videotext services.

Russell, Sally. **"Videotex '83: 'The Business Begins.'"** *CableVision*, July 4, 1983, pp. 51-52. A preview of issues to be addressed at an annual conference of the videotext industry.

Sichel, Berta. **"How the French are Using Videotex."** *I/P Report*, Spring/Summer 1983, p. 2. A look at the results of an 18-month videotext trial in France.

"Videotex '83: Molding the Dream into Reality." *Broadcasting*, July 4, 1983, pp. 63-64. A review of activities at the Videotex '83 conference.

Satellite

Carpinello, Cheryl R., Lucinda Weindling, and Pat Hoyos. **"Satellite Transponder Chart: Who's Carrying What on Which Satellite?"** *Satellite Communications*, June 1983, pp. 35-37. A guide to owners, operators, and services of every satellite transponder in North America.

"DBS Plans Deadlocked in Geneva." *Broadcasting*, July 11, 1983, pp. 26-27. A review of developments concerning orbital slots for DBS service at the Region 2 conference.

"The Ever-Closer Approach of DBS." *Broadcasting*, June 6, 1983, p. 42. An overview of recent FCC actions on DBS service.

Foster, Edward. **"A Communications Satellite."** *Technology Illustrated*, May 1983, pp. 64-65. An explanation of communications satellite technology.

Jensen, Elizabeth. **"DBS Future in U.S. Rests with Geneva Conference."** *Electronic Media*, June 30, 1983, p. 15. A review of issues before the regional administrative radio conference which include allocation of DBS frequencies and orbital positions for satellites.

Hulse, Carolyn. **"European DBS Waits for Birds."** *Electronic Media*, June 23, 1983, p. 14. A report on the status of European satellite projects.

McDougal, Patrick J. **"Direct Broadcast Satellites in the USA."** *Telecommunications*, June 1983, pp. 16-17, 20-27. A description of DBS technology and the systems planned for the mid-1980s.

"1983-84 Satellite Industry Directory." *Satellite Communications*, pp. 7-74. A listing of companies in the satellite industry.

Olson, David. **"Satellite Services in Houston."** *Satellite Communications*, June 1983, pp. 20-25. A guide to satellite services in Houston, Texas.

Schaefer, Mary Tonne. **"Expediting Access to Satellite Technology."** *Information Retrieval and Library Automation*, June 1983, pp. 1-4. A review of the COMSAT annual report for 1982, which outlines the agency's role in addressing new developments in satellite technology.

Teleconferencing

"Alaskan Legislative Teleconferencing Net Brings the Democratic Process to the People." *Communications News*, July 1983, pp. 100-101. A profile of a teleconferencing network in Alaska providing access to the state's legislative process.

Landay, Jerry. **"Staging Newsweek's International Videoconference."** *Video User*, May 1983, p. 25. A review of a videoconference with an interactive question and answer capability linking four cities on three continents.

Mayo, Candace. **"Overseas Videoconferencing. New Markets for Digital Satellite Service."** *Telecommunications*, June 1983, pp. 102-104, 111. A description of how businesses are providing videoconferencing services internationally.

Mermigas, Diane. **"Teleconferencing Comes into its Own."** *Electronic Media*, July 14, 1983, pp. 1, 16-17. A discussion of the rapid growth of the teleconferencing market.

Walsh, Mary Ann. **"A Medical Teleconference With Point."** *E·ITV*, June 1983, pp. 24-28. A critique on an interactive symposium addressing microbiology and urinalysis.

Zimmer, Marcus B. **"The Teleconferencing Medium is the Message."** *Government Data Systems*, May/June 1983, pp. 26-27. An overview of the use of teleconferencing for continuing education and training by the Federal Judicial Center.

The Teleconferencing Handbook: A Guide to Cost-Effective Communication, by Ellen A. Lazer, Martin C.J. Elton, and James W. Johnson. Knowledge Industry Publications, Inc. [701 Westchester Ave., White Plains, NY 10604]. 1983. 219 pp. $34.95 hardcover.

An examination of the economics of teleconferencing, particularly the video mode. This book covers various aspects of the technology including networking, conducting needs analysis, differences among four types of teleconferencing, and a directory of equipment and service providers.

Teleconferences Introduce Teaching and Testing Concepts

Public and private school administrators and representatives of colleges and universities, as well as teachers and parents, gathered last spring at sites across the country to participate in a national teleconference introducing a new concept for teaching and testing the reading and thinking abilities of students.

Distributed over satellite by the educational cable television network, The Learning Channel, "Can Our Children Read?" introduced an integrated system for improving instruction and comprehension that was developed by the College Board with the Carnegie Corporation, the New York State Education Department, and Touchstone Applied Sciences Associates.

A diverse, one-time network was established by The Learning Channel, including their own affiliated cable systems, nonaffiliated cable systems, and many public television stations. Although the program is directed specifically towards secondary school and college administrators, the widest distribution possible was sought because teachers and parents also have an interest in the concept being introduced. Therefore, planners devised a combination of individual teleconference sites and home viewing capability.

In New York, Los Angeles, and elsewhere in California, PBS stations aired the program live and hosted private sites for school administrators from their respective metropolitan areas. Continental CableVision of Madison Heights, Michigan, an affiliate of The Learning Channel, distributed tapes of the show to schools in the Detroit area who would otherwise not be able to view it. Oscar Rose Junior College in Midwest City, Oklahoma, inaugurated a campus satellite-receive dish with the program. And Storer Cable in Brooklyn Park, Minnesota, established a site at the cable studio where participants

from six public schools districts, four colleges, and 12 private schools gathered.

In addition to similar local participation throughout the country, statewide activities also were developed to reach the teleconference audience. In Lincoln, Nebraska, the PBS station and the state department of education joined forces to involve school administrators from the entire state. The state departments of education in Kansas, Wisconsin, and Florida each taped the teleconference for delayed presentation to local school administrators.

The telecast consisted of a half-hour documentary addressing issues related to comprehension instruction and assessment, and was followed by an hour-long live studio discussion about the new concept among some of the country's leading educators and reading experts.

Conducted as a talk show, the live segment included questions from a studio audience of administrators, teachers, parents, and representatives of the media. Viewers of the teleconference had the opportunity to question the panelists through toll-free long distance telephone calls.

Development of the teleconference was a joint effort of The Learning Channel and the College Board. For additional information contact Judy Ballangee, director of public affairs, Appalachian Community Service Network, 1200 New Hampshire Avenue NW, Suite 240, Washington, DC 20036; 202/331-8100.

Videotape

"A Producer's Guide to Video Software Marketers." *Videography*, June 1983, pp. 30-44. A listing of companies that market videocassette programming.

Scheye, Eric. **"Is Home Taping A Crime?"** *Channels*, May/June 1983, pp. 16-20. A discussion of the issues involved in the copyright/home recording case now before the Supreme Court.

Videodisc

Goldberg, Marvin. **"Survey Shows Disc Training Works Well for American Bell."** *E·ITV*, June 1, 1983, p. 57. A review of the results of a survey conducted by American Bell to determine the effectiveness of videodisc for product introduction and training.

Gupta, Udayan. **"Videodiscs Build on New Credibility."** *Electronic Media*, June 2, 1983, pp. 15-22. An overview of a study that suggests that the videodisc market is growing and that consumer as well as business uses will expand.

Nelson, David. **"The Age of Videodisc."** *Open Line*, June 1983, pp. 8, 9. A description of projects underway at the British Open University to study the potential of videodiscs.

Riddick, John. **"Videodisc Technology: Developments 1980-82."** *Library Hi-Tech*, Summer 1983, pp. 93-96. A review of literature over a three-year period that reports on videodisc development.

MACROSCAN

Articles, books, resource documents, programs and projects involving the uses of combined technologies.

Donnachie, Ian. **"Viewing the Australian Distance Learning Scene."** *Open Line*, June 1983, pp. 9-11. An examination of the distance learning programs at several universities in Australia that use audio- and videotapes in addition to print materials.

Geller, Henry. **"Regulatory Policies for Electronic Media."** *Telecommunications*, May 1983, pp. 128, 130-33. A look at the new technologies and regulatory policies that govern them.

Harrison, Michael A. **"Whatever Happened to the 'Wired City'?"** *Cable Communications*, June 1983, pp. 26-28. A discussion of the many new technologies that will compete with cable.

Villarreol, Armando. **"Distance Education for Latin Americans."** *Continuing Higher Education*, Spring 1983, pp. 23-25. An analysis of distance education in Latin America and the role of U.S. institutions in helping to strengthen foreign educational systems.

Wist, Gary. **"Who's Watching Whom?"** *CableVision*, June 6, 1983, pp. 5-15. A look at several efforts undertaken by state legislatures to protect consumer rights over cable privacy.

Communicating in the '80s, by Alan Green. The Benton Foundation, [1776 K Street NW, Washington, DC 20006]. 1983. 64 pp. $3.

An examination of the new technologies including case studies on appropriate and effective uses. This booklet focuses on applications of technology by nonprofit organizations.

Telecommunications Policy, An Introductory Bibliography Covering Domestic and International, Government, Corporate, and Public Policy Concerns. Center for Telecommunications Studies, George Washington University [Washington, DC 20052]. 1982. 20 pp.

A listing of literature on many aspects of telecommunications policy.

Telecommunications Systems and Service Directory, Issue 1. Edited by John Schmittroth, Jr. and Martin Connors. Gale Research Company [Book Tower, Detroit, MI 48226]. 1983. 218 pp. Three-issue subscription $150.

A listing of more than 800 systems and services transmitting data, voice, text, and images which are described in 18 categories including contact information, purpose or areas of specialization, publications, and others. This edition of the three-volume set covers teleconferencing, interactive cable, satellite, videotext and teletext, and electronic mail. A glossary is included.

COMPUSCAN

Articles, books, programs and projects involving the uses of computer technologies.

Computers

"Computer Literacy . . . Would Plato Understand?" edited by Peggy Brown, *The Forum for Liberal Education*, May/June 1983, pp. 2-19.

Efforts to promote computer literacy in higher education are described in this publication from the Association of American Colleges. In an introductory essay, "Computing and Higher Education: The Revolution Is Through the Gates," Robert G. Gillespie suggests that campuses are reacting to an "accidental revolution" in computing, and that definitions of "computer literacy" vary by field and purpose.

Details of programs and activities at several colleges show varied approaches to attaining computer literacy. Rollins College, Florida, hopes to have 100 percent of its students computer literate by 1985 by offering an elective computer literacy course and including computer-based instruction in regular courses. Carnegie-Mellon University plans to introduce early in 1985 a distributed computing network that will provide the entire campus with access to powerful personal computers. Besides student coursework, faculty development is an objective of the programs at Pepperdine University and Marymount Manhattan College. Hamline University in 1980 approved a computer literacy requirement for all students, and Drexel University will begin in fall 1983 to require all freshmen to buy their own microcomputers.

Even the corporate world has gotten involved by donating equipment and software.

Brief descriptions are provided for programs at Allegheny College, University of California at Santa Barbara, Colgate University, Gallaudet College, George Mason University, Guilford College, Hollins College, Indiana University, Rutgers, University of Washington, and Western New England College. A list of resources is also included.

"Standing Close to the Door at the Computer Celebration," by David G. Gueulette, *Training*, June 1983, pp. 44-45, 51.

We are perhaps in the "infatuation phase" of a doomed romance with second-generation teaching machines, suggests Gueulette. In this wary look at the computer revolution, he points out the pitfalls.

The key strength of the microcomputer—individual, interactive instruction—is also its financial weakness. As hardware costs have come down, software costs have risen. Servicing response time as well as costs have become problem areas. Since only one or two people can use a micro at one time, the cost per trainee is much higher than for traditional methods.

The fact that typing skills are necessary to effectively interact with most courseware means that many potential users will stay away from the machine or at least suffer high anxiety toward it. The "hunt and peck" approach is especially nonproductive with timesharing equipment.

There is some question as to the real use of microcomputer programs and equipment since they are limited to highly logical instruction, which is not really applicable to teaching hands-on skills effectively—notable exceptions being pilot-training and driver training simulators. Recent research suggests that as much as 50 percent of the population has the kind of cognitive structure that resists learning from the highly linear and orderly process of the computer.

Overall, there is much promise but significant barriers. Many breakthroughs are still in the future—those that will make micros really easy to use and programs, the widespread availability of top-quality instructional programs, and a general positive attitude toward sitting in front of a machine for long periods of time.

Africk, Henry. **"Computer-Assisted Instruction in Precalculus Mathemetics."** *Collegiate Microcomputer*, May 1983, pp. 179–81. A profile of a series of computer-assisted instruction programs in use at the New York City Technical College.

Angel, Dan and Bill McCusker. **"Survey Reveals Dramatic Growth of Computer Use."** *Community and Junior College Journal*, May 1983, pp. 23-24. A report on a survey taken by Citrus College in California to assess community colleges' use of computer.

Bender, Louis W. and Lora P. Conrad. **"Colleges Bent on Computers Benefit from NDEA Gliches."** *Community and Junior College Journal*, May 1983, pp. 20-22, 60. An examination of outcomes of the National Defense Education Act of 1958 which demonstrates why community colleges should develop systematic plans for introducing computer technology into their institutions.

Brown, Marc, Norman Meyrowitz, and Andries van Dam. **"Personal Computer Networks and Graphical Animation: Rationale and Practice for Education."** *AEDS Monitor*, May/June 1983, pp. 15-24. An examination of how developments in computer hardware and software may be applied to teaching computer science.

Covey, Preston K., Jr. and Michael G. Southwell. **"Using Computers in Teaching Reasoning and Writing."** *Collegiate Microcomputer*, May 1983, pp. 141–46. A report on a July 1982 conference at Carnegie-Mellon University that examined the uses of microcomputers to teach reasoning and writing.

Danish, Paul. **"University of Colorado Faculty Will Get IBM PC's."** *InfoWorld*, July 18, 1983, pp. 17, 19. A report on the University of Colorado's plan to equip all faculty with IBM personal computers.

Dray, James and Joseph A. Menosky. **"Computers and a New World Order."** *Technology Review*, May/June 1983, pp. 12-16. A profile of an international research group established by the French government to study the impact of computers on people and societies.

Fincke, M. Susan and Lynne Wakefield. **"Archeologists Dig Computers."** *Community and Junior College Journal*, May 1983, pp. 36-37. A look at the data collection system of Pima Community College (Arizona) archeology students utilizing a microcomputer.

Glossbrenner, Alfred. **"Personal Computers: Passport to the Electronic Universe."** *Technology Review*, May/June 1983, pp. 61-71. A discussion of online databases for owners of personal computers.

Greenwell, Raymond N. **"Microcomputers in Undergraduate Mathematics: Writing the Successful Program."** *Collegiate Microcomputer*, May 1983, pp. 119–23. A discussion of guidelines for developing effective programs for undergraduate mathematics instruction.

Kemeny, John G. **"The Case for Computer Literacy."** *Daedelus,* Vol. 112 (Spring 1983), 211–30. A discussion of the need for widespread computer literacy.

Masat, Francis **"Computer Literacy: An Adult Education Workshop."** *Collegiate Microcomputer,* May 1983, pp. 159–63. An examination of a course to teach adults how to use computers.

McConnell, Barry. **"More Affordable Now, Computers are 'Opening Doors.'"** *Electronic Education,* pp. 20-21. A view of computers that aid the physically disabled.

Medsker, Larry. **"A Course in Computers and Music."** *Collegiate Microcomputer,* May 1983, pp. 133–63. A description of an undergraduate course in computers and music as well as other applications of computers in the field of music.

Miller, Thomas W. **"CBE Integrating Video Display and Information Processing."** *EDUCOM Bulletin,* Spring 1983, pp. 14-17. A discussion of computer-based education, particularly the PLATO system, as a solution to the problem of productivity in higher education.

Morrissey, Robert and Claude Del Vigna. **"A Large Natural Language Data Base: American and French Research on the Treasury of the French Language."** *EDUCOM Bulletin,* Spring 1983, pp. 10-13. A description of a computerized database of French language texts.

Post, Nancy. **"Microcomputers and Language Training."** *Journal of Educational Technology Systems,* Vol. 11 (1982-83), 277-83. A discussion of how to incorporate computers into a language training curriculum.

Rine, David C. **"Introduction to an Approach to Selection, Operation, and Maintenance of a Microcomputer System."** *Collegiate Microcomputer,* May 1983, pp. 105–18. A guide to intelligent decisionmaking in purchasing, operating, and maintaining a complete microcomputer system.

Rosenheim, Andrew. **"How Computers Threaten Book Publishing."** *Channels,* May/June 1983, pp. 34-36. A commentary on the need for book publishers to consider entering the software publishing field along with the computer hardware firms that have already entered the market.

Spain, James D. **"Computer Applications in College Biology."** *Collegiate Microcomputer,* May 1983, pp. 129–32. A discussion of the wide range of applications for the personal computer in biology instruction and research.

Stewart, William J. **"Meeting Learning Styles Through the Computer."** *Journal of Educational Technology Systems,* Vol. 11 (1982-83), 291-96. An examination of computer systems that match students' learning styles to instructional techniques.

"The Struggle to Go to the Head of the Class." *Business Week,* June 20, 1983, p. 68. A look at donations and discounts on computer equipment offered by manufacturers to educational institutions.

Trudell, Libby. **"Electronic Mail Systems: Communication Networks for Libraries."** *Library Hi-Tech,* Summer 1983, pp. 41-43. A definition of electronic mail systems.

Warden, William H. III and Bette M. Warden. **"Microcomputers for Libraries: Features, Descriptions, Evaluations."** *Library Hi-Tech,* Summer 1983, pp. 25-39. A discussion of microcomputer hardware suited to library applications.

Watcke, Ronald R. and Caron McCracken. **"Systematic Confusion? WC3 Shares DP Insights."** *Community and Junior College Journal,* May 1983, pp. 26-29, 43. A profile of the academic computing system at Wayne County Community College (Michigan).

Weiss, Alan Jay. **"The Revolution Around Us."** *Training,* June 1983, pp. 42-47. An examination of the trends and developments in microcomputer applications and their impact upon training and development professionals.

Zonderman, Jon. **"Computers for the Blind?"** *Technology Review,* July 1983, pp. 73-74. A look at computer aids for the blind.

The Computer: Extension of the Human Mind. Proceedings of the Third Annual Summer Conference, College of Education, University of Oregon. Available from ERIC Clearinghouse on Educational Management, University of Oregon [Eugene, OR 97403]. 1982. 236 pp. $10 prepaid.

A resource for administrators deciding to incorporate computers into instructional programs. This book is a collection of presentations covering topics such as computer literacy, off-campus programs, serving mentally handicapped students through interactive video, and providing career information.

Selected Microcomputer Software 1983. Opportunities for Learning, Inc. [8950 Lurline Ave., Dept. CB83, Chatsworth, CA 91311]. 1983. 64 pp.

A listing of educational software designed for the Apple, TRS-80, Pet, and Atari microcomputers. This catalog provides information on software for K-12 to adult in subject areas such as math, business, foreign language, and career skills.

EDUCOM Forms Project On Computer Literacy

The Computer Literacy Project is EDUCOM's latest effort to expand the higher education consortium's services in response to computing and information technology needs of its more than 475 member institutions.

According to project director, Steven Gilbert, "We're collecting information about activities that colleges and universities identify as 'computer literacy.' Once this information is assembled, we plan to work on theoretical definitions, a conceptual framework, and computer literacy guidelines. In the meantime, our working definition of computer literacy is "being able to cope comfortably and effectively with computer-related technology."

The project has grown out of an investigation of computers-in-education needs, where three major hurdles to computer literacy for college and university students and faculty were identified:

- lack of an effective feedback system for identifying successful computer literacy programs;
- lack of a widely supported definition and conceptual framework for computer literacy;
- confusion about the overwhelming tide of hardware, software, and "courseware."

In responding to each of these needs, the plan calls for the development of services to help educators exchange ideas and information about computer literacy, computer literacy programs, and tested services and materials. A preliminary survey of educators involved in computer literacy programs, or planning for them, was mailed this summer. EDUCOM also plans to organize workshops, lectures, and consulting services. Case histories of successful computer literacy programs will be developed. Use of computer-based conferences and online databases will be tested.

EDUCOM plans to conduct a comprehensive survey of faculty members and

administrators involved in computer literacy programs early this fall. Based on the survey, project staff will identify exemplary models of computer literacy curricula and other activities. Eventually, colleges and universities will be encouraged to match their own unique characteristics and needs with curriculum models, to customize and implement tested models, and then to integrate the new programs with their school's curricula.

"The Computer Literacy Project is drawing an enthusiastic reponse from faculty and administrators from all disciplines, as well as from experts in business and industry," says Gilbert. "Once the major issues are in focus, we'll move quickly to form a project advisory group called the Leadership Task Force."

To get involved, or for more information, contact: EDUCOM, Computer Literacy Project, P.O. Box 364, Princeton, NJ 08540; 609/734-1915.

Interactive Video

"Why Educators Should Take the Interactive Media Plunge," by Genine Amada, *E·ITV*, June 1983, pp. 45-46, 56.

Although there are conflicting opinions and some general hesitation about the prospect of the interface of videodisc with microcomputers for education uses, the George Washington University Medical Center experimented with its development for instructional purposes.

The main objectives were: (1) to present all of the display capabilities of the disc player, including step-frame, still-frame, and motion; (2) to create a computer-assisted program that would use the capabilities of the Apple micro; (3) to encourage health science educators to think in terms of interactive audiovisual methods of instruction; and (4) to create an efficient system that used the least amount of hardware and software—making it practical for economy-minded educators.

A dual monitor system was chosen to help achieve the fourth objective. The display from the disc appears on one screen and the text from the computer on another.

The GWU programmers chose an adventure game format to develop their idea. Although it had nothing to do with medical education—it required players to move through various rooms in a museum, each of which had a separate lesson to be mastered before moving on—the game interested people in its potential for instruction. The use of music and multi-media made for an effective presentation. Apple sound effects were used to reinforce correct user responses and various uses of the two screens helped reinforce viewer attention.

The formative research focused on the need for user helps and instructions in the computer-generated text material. In spite of problems, the technology allows for a very wide range of display possibilities. The player and monitor can be used alone to display slides, motion, and step-frames, which are perfect for illustrated psychomotor skills. The computer allows for immediate evaluation of the program design.

Because various "tests" can be incorporated into the program itself, videodisc projects must be carefully and comprehensively scripted and flowcharted as the visuals are being selected. A complete system can be obtained for $4,500.

Cameron, Murdo. **"An Interactive Training Environment for Pilots."** *E·ITV*, June 1983, pp. 34-36. A description of an interactive training system for military and civilian pilots.

Hon, David. **"Respecting the Intricacies of Design."** *Video User*, May 1983, pp. 22, 23. A view of the basic problems involving interactive video potential and its current applications.

"How a Country Broker Uses Discs." *E·ITV*, June 1983, pp. 87-88. A profile of a brokerage firm's use of interactive video for consumer presentations and training.

Mace, Scott. **"DEC's Interactive Video System Improves On-Site Learning."** *InfoWorld*, July 11, 1983, p. 18. An examination of a new microcomputer-based interactive video system produced by Digital Equipment Corporation.

"What Trainers Think About Interactive Video." *E·ITV*, June 1983, pp. 82-86. An interview with several training specialists on the effectiveness of interactive video.

Handbook of Interactive Video, by Steve Floyd and Beth Floyd, et al. Knowledge Industry Publications [701 Westchester Ave., White Plains, New York 10604]. 1982. 168 pp.

An explanation of the interactive video concept discussing videodisc design, programming, and production. This book is designed for those involved in educational and training applications of the technology, particularly where instruction and computer-assisted learning are essential in program design.

Electronic Text and Higher Education

continued from page 1

This is not unreasonable since electronic text is indeed an adaptation from these services, with a few new twists.

In attempting to come to grips with electronic text and its potential for higher education, it may be useful to step back and review what has happened in the United Kingdom, a country with more experience in electronic text than any other.

The story (perhaps apocryphal) is told that electronic text was born during a trip by British scientists to Bell Labs in New Jersey during the late 1960s. The British scientists were shown a demonstration of picturephone. However, they did not think too highly of a picture telephone that allowed a person to see someone at the other end of the telephone line. Their interest was piqued by the notion of using a television screen in the home to display information that was carried over a telephone line. They felt that print on a screen was a viable alternative to pictures and were thrilled at the potential of a service that would encourage greater use of the underutilized British telephone network. With this insight of using telephone lines and existing televisions in homes to display text, the scientists returned to the U.K. and developed Viewdata, a videotext service that later came to be called Prestel.

With the hindsight of much research, both in the U.K. and outside, it appears that the British scientists were on target in several respects but they failed to anticipate some economic barriers and the importance of interactivity. They were on target in trying to piggyback the new service on existing technology in the home and in finding new uses for underutilized transmission capacity. However, the cost of the terminal required to access Prestel (several hundred dollars) and the cost of the computer network required to serve online customers were prohibitive for a mass consumer market. Further, many of the services that research tells us people are willing to pay for, e.g., electronic mail and home banking, were not available on the early Prestel system.

Prestel failed as a home service during its first few years of operation. It survived through support from British Telecom, its parent company, and by shifting its orientation from consumers to businesses. In 1983, Prestel began a series of new experimental home services. They are directed towards homes that already own a personal computer and modem (software to adapt selected personal

computers for Prestel costs under $100). Further, they have introduced interactive services and provide some one-way information by downloading it into a user's personal computer, where it is stored for later reading when the telephone line has been disconnected. This reduces a user's online time and therefore his or her bill, as well as the cost of maintaining the computer network. In addition, Prestel acts as a "gateway" for many services, linking the user to the host computer of a service provider, e.g., banks, airlines, and department stores. The success of these changes is yet to be determined. However, they do reveal how a group with more videotext experience than any other is attempting to design a second-generation service.

The British experience in teletext constrasts with their videotext experience in that teletext has been accepted by large numbers of homes, yet the lessons emerging from CEEFAX and ORACLE (the BBC and commercial teletext services respectively) are parallel to Prestel. British teletext makes use of an underutilized part of the television broadcast signal (the vertical blanking interval) and displays information on home TV screens. The cost of a teletext decoder is relatively inexpensive (under $200). Further, there are no additional costs after a person purchases or rents a teletext-equipped TV. In mid-1983, more than one million homes in the UK receive teletext.

The British Council for Educational Technology (CET) has initiated the bulk of educational uses for teletext and videotext in the U.K. CET set up an umbrella group within Prestel and encouraged more than 100 schools (principally at a high school level) and libraries to participate as information providers and users. In general, education groups have been among the largest users of Prestel. Brian Champness, in *Social Uses of Videotext and Teletext in the U.K.*, reports that education ranks fourth or fifth on a regular basis in the Prestel League Table of Users. Among the broad range of applications have been:

- supplementary course materials in economics, business, geography, and social studies.
- guidance materials and information about the status of individual applications to British universities.
- computer-assisted learning packages. Hatfield Polytechnic's Advisory Unit for Computer Based Education has put 12 CAL packages on Prestel.
- abbreviated college course catalogues. This was included in the Glasgow High School Project sponsored by the Scottish Council for Educational Technology.
- downloaded software and information in support of Open University courses. This project was developed by the Educational Technology Department of Open University.
- language learning.
- public Prestel terminals located in libraries.

The reactions to Prestel in education may be characterized as positive with qualifications. Educators give it positive marks for ease of use, effectiveness in conveying brief supplementary materials, and motivational value in stimulating student interest in topics. However, Prestel is criticized as too expensive and overly commercial in orientation. Further, much concern has been expressed about teacher resistance to Prestel and the need to provide better teacher training in the use of videotext. In response to these problems, CET has developed a kit to help teachers get started in using videotext, and Prestel management has begun to emphasize the downloading of telesoftware (to reduce costs for users).

There have been relatively fewer uses of broadcast teletext for education in the U.K. The "19 Schools Project" provided teletext pages in support of educational TV programs such as "Exploring Science." Teletext pages were made available before and after the program providing information for both teachers and students. In addition, the hearing-impaired community in the U.K. has utilized teletext for a variety of educational and consumer information services, as well as to provide captioning. More recently, in spring 1983, attention turned to the downloading of educational software via teletext. A trial is underway, with an evaluation by Brighton Polytechnic.

What inferences can be drawn from the U.K. experiences in teletext and videotext for the development of electronic text for higher education in the U.S.? It would appear that one important lesson is to build flexibity into the development of services, i.e. both allow and expect the service to evolve over time. The U.S. has a more complex transmission environment than the U.K. (e.g., one third of U.S. homes subscribe to cable). In addition, the availability of transmission options for educational institutions and public broadcasters varies geographically and in terms of local competition by other potential users such as data services for business. This suggests that the pattern of electronic text services for higher education will initially be quite diverse. Over time, certain transmission options may rise to a position of prominence.

Costs are likely to be a strong determinant in the design of educational applications and the acceptance of those applications by institutions as well as individuals. A good deal of research suggests that people like electronic text but they are not willing to pay very much for it. Further, while education is a desirable electronic text service, it does not rank at the top of user demands. From the educators' side, electronic text has fared well as an effective educational tool, but has performed less robustly in terms of attractiveness and acceptability to students and classroom teachers. (There are some notable exceptions where it has indeed been attractive and acceptable.)

In the U.S., as in the U.K., personal computers may figure prominently as terminals for electronic text services. Indeed, it appears that a number of services will grow in piggyback fashion on the penetration of personal computers in the home. Further, the downloading of information both in teletext and videotext modes offers the potential to reduce costs for users and service providers.

There is little question that electronic text can provide many useful services for higher education: supplements to telecourses, stand-alone modules for use in classrooms, text-only extension courses, noninstructional services on campus, and university bulletin board information for the home, among others. However, it is also clear that much careful planning, testing, implementation, and evolution lie ahead.

NEW! Center Offers Audio Teleconferences on Telecommunications and Higher Education

For the first time this fall, the Center for Learning and Telecommunications is organizing an audio teleconferencing program to provide administrators and educators with an overview of current practice in the application of telecommunications technologies for postsecondary education. Center staff has been presenting these overviews in person over the past several years at national conferences, workshops, and before other select groups—presidents' and deans' councils, boards of trustees, etc.—across the country. Response to this overview presentation has always been favorable.

While demand for just this type of general, state-of-the-art overview continues, many groups in need of this information are unable to pay the high costs for travel and lodging involved in face-to-face presentations. Audio teleconferences are a cost-effective means of conducting interactive meetings over telephone lines connecting individuals or groups located at distant sites. All that's required at each site is a meeting place (i.e., conference room or other facility), and a speaker phone with one or more microphones. The Center will arrange access to a "bridge" (a sophisticated device that connects phone lines from each of the sites). In this way, Center staff and other panelists working from their own offices can make presentations to groups convened at multiple sites and entertain questions and comments from participants.

For the cost of a registration fee and telephone call, you can participate at the location of your choice, with us and other experts around the country, in a presentation that includes a detailed explanation of what the various technologies are, how they work, and examples of their uses at institutions, an opportunity to interact with Center staff and other panelists with expertise in this field, plus a resource packet containing supplementary summaries of programs and Center publications.

We have scheduled two dates to implement this exciting new format:

Tuesday, November 15, 1983 1:30-3:30 p.m. (EST) **Tuesday, December 6, 1983 1:30-3:30 p.m. (EST)**

The fee for participating in either of these audio teleconferences is $350 per site. This fee covers:

- convening of up to 15 participants at your site;
- the bridging fee to connect your site with others we've arranged, including panelists and other resource people;
- two copies of the book, *Meeting Learners' Needs Through Telecommunications: A Directory and Guide to Programs*, by Raymond J. Lewis (a $90 value), an important study of 70 model programs using telecommunications for postsecondary instruction, *plus* discounts on purchases of additional copies.
- sample issues of *TELESCAN*, the Center's bimonthly digest of up-to-date developments in telecommunications, *plus* subscription discounts for all participants.

The number of sites we can accommodate for each teleconference date is limited, so act now. Fill out the coupon below to reserve the date of your choice. Don't miss this opportunity to participate in a top-level briefing on current uses of telecommunications technology in higher education.

____ Yes, I want to participate in the audio teleconference on telecommunications and higher education.

Date requested _____ Approximate number of participants _____

Name of site coordinator (for all future correspondence) _____ Phone _____

Title _____ Institution _____

Address _____ Zip _____

Be sure to include your check for $350 payable to Center for Learning and Telecommunications/ AAHE, and mail to One Dupont Circle, Suite 600, Washington, DC 20036. *In the event that the date for which you have registered is filled, or if minimum registration requirements are not met, we will refund your registration in full.*

TELESCAN ORDER FORM **TS-1**

Name _____ Phone _____

Title _____ Institution _____

Address _____

Are you a member of the American Association for Higher Education? ☐ Yes ☐ No

☐ Please enter ____ subscription(s) to *TELESCAN*, Volume 3, plus unlimited access to the inquiry service during its pilot phase at $45 ($40 for AAHE members) each. Add $5 per subscription outside U.S. Subscriptions $_____

☐ Yes, I want to receive a copy of *Meeting Learner's Needs Through Telecommunications: A Directory and Guide to Programs* plus unlimited access to the inquiry service during its pilot phase for $45. Add $2.50 postage per copy for orders outside U.S. Directories $_____

☐ I also want to receive back issues of *TELESCAN*, plus the cross-referenced index at the discounted price of $30 per volume. Add $1.50 postage per set for orders outside U.S. Indicate which:
_____ Vol. 1 (1981-82) _____ Vol. 2 (1982-83). Back issues $_____

Sorry, all orders must be prepaid in U.S. funds. We cannot process purchase orders without payment. Make checks payable to Center for Learning and Telecommunications, or charge your MasterCard or Visa (circle one): Account # _____ Card expires _____ Total enclosed $_____

Signature _____

Mail form and payment to Center for Learning and Telecommunications, One Dupont Circle, Suite 600, Washington, D.C. 20036.

Periodicals

Abstracts and bibliographies appearing in this issue of *TELESCAN* cover the period between May 15, 1983, and July 15, 1983. Below is a list of periodicals reviewed for this issue that do not appear on our original list of publications (September/October 1981):

Collegiate Microcomputer
Way With Words

Government Data Systems
Media Horizons

Information Retrieval & Library Automation
Lomond Publications, Inc.

ITP Report
New York University

Library Hi-Tech
Pierian Press

Contributors

Contributors to this issue of TELESCAN are listed below. The efforts of these individuals have been critical to our monitoring activities. ***We urge those of you who wish to become part of this important information network to submit to TELESCAN items of potential interest to our broadly based audience.***

John Carey
New York University

Russell Edgerton
American Association for Higher Education

Jinny Goldstein
Public Broadcasting Service

Donald McNeil

Ann Stokey
National Public Radio

Markus B. Zimmer
Federal Judicial Center

Center for Learning and Telecommunications
One Dupont Circle, Suite 600
Washington, D.C. 20036
202/293-6440

Director: **Marilyn Kressel**
Research Director: **Raymond Lewis**
Communications Coordinator: **Karen Sibert**
Secretary: **Heidi Kenaga**

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Telescan
Editor: **Marilyn Kressel**
Managing Editor: **Karen Sibert**

AAHE
AMERICAN ASSOCIATION
FOR HIGHER EDUCATION
ONE DUPONT CIRCLE, SUITE 600
WASHINGTON, D.C. 20036

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TELESCAN

NOVEMBER/ DECEMBER 1983

The Digest of the Center for Learning and Telecommunications VOLUME 3 ISSUE 2

Preserve the ITFS Spectrum For ITFS Systems

John A. Curtis and Nina J. Thayer

Excerpts from an article appearing in the June 1983 issue of *E·ITV*. Reprinted with permission of the publisher.

On March 19, 1980, the Federal Communications Commission passed Docket 80-112, which proposed to reallocate the Instructional Television Fixed Service (ITFS) spectrum band of 2,500-2,690 MHz so that Multipoint Distribution Service (MDS) and Private Operational Microwave Fixed Service (OFS) systems could have more channel space, and to improve the utilization of the spectrum since, in the FCC's opinion, the ITFS channels were not being used fully (and sometimes not at all) in many areas of the country. Looking back, this docket was probably one of the least professional publications the FCC has ever issued, and ITFS operators promptly challenged it. Based on data from a national survey of ITFS systems and an in-depth review of the FCC's own ITFS records that the National Instructional Telecommunications Council, Inc. (NITC), the ITFS counterpart of public television's Public Broadcasting Service, had fortuitously just completed at that time, ITFS operators pointed out that the information upon which the docket was based was inaccurate and shallow.

Now allocation of the ITFS channels is once again up for decision, and it is time once again to examine the use, technology, services, and potential of America's ITFS systems. It is also time again to point out to the FCC and to the Senate Committee on Telecommunications (which has FCC surveillance responsibilities) that the research shows the ITFS spectrum to be our country's foremost nonprofit educational resource—a resource that is being used and used very effectively.

A Study of ITFS Use and Cost-Effectiveness

For their third bi-annual, in-depth, nationwide study of ITFS systems and their use, NITC and CenTeX® (The Center for Excellence, Inc.) made an intensive review of FCC records concerning ITFS systems that are in operation, under construction, or have filed applications for construction permits, and supplemented that with address-list printouts from the FCC and from the Facility/Application Information Report (FAIR). (FCC records were computerized in 1981, and are now indexed only by station call letters.) For further validation, all known operating or pending systems were then called.

From the calls, we learned that there

continued on page 2

A Course for ITFS

William T. Reed, senior vice president for education, Public Broadcasting Service

Since the publication of "Preserve the ITFS Spectrum for ITFS Systems" by John A. Curtis and Nina J. Thayer, the Federal Communications Commission has issued its Report and Order on Docket 80-112. Though the report is quite lengthy and contains numerous points of interest, two key items pertain specifically to the reservation of ITFS frequency space and acceptable uses for ITFS channels:

1. Two groups of four channels each, previously reserved for educational use, will be reassigned for Multipoint Distribution Service (MDS) use in all communities in which those channels are not licensed to or applied for by eligible ITFS operators.
2. ITFS licensees may lease excess channel capacity to commercial entities.

Regarding the first point, PBS and its member stations were on record with the FCC against any reallocation of ITFS spectrum space. We believe and continue to maintain that the preservation of the ITFS spectrum should be a fundamental part of this nation's communications and education policies. We have reconfirmed our opposition to the FCC's decision by filing a Petition for Reconsideration of Docket 80-112. PBS and its member stations join Curtis, Thayer, and other supporters of education in urging the FCC to reevaluate the available evi-

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Plans underway for University of the Air in Japan ..... page 5
Overview of recent developments in videotext/teletext services..... page 6
Computer resources for pre-college teachers and handicapped ..... page 9
Catalog of college-level audio and video courses ..... page 10
Profile of instructional telecommunications in Alaska..... page 10

SCAN

Dear Subscriber:

As many of you undoubtedly know, the controversial proposal for reallocation of the Instructional Television Fixed Service (ITFS) spectrum band by the FCC has stirred a great of concern among educators. In an effort to address what it deemed as underutilization of those channels previously reserved for educational use, the FCC has ruled that some channels previously reserved for education will reallocated for commercial use and that ITFS licensees may lease excess channel capacity to commercial organizations.

To address the range of concerns flowing from the FCC action on the preservation of ITFS channels as a resource to all of education, this issue of *TELESCAN* provides you with some thoughtful analyses of the controversy. In their article "Preserve the ITFS Spectrum for ITFS Spectrum for ITFS Systems," John A. Curtis and Nina J. Thayer sort out the various issues surrounding the use of ITFS including cost effectiveness and the potential of the technology for interactive education and training. Thayer and Curtis argue persuasively that preservation of ITFS as a public resource is intrinsically linked to the preservation of the spectrum for nonprofit and educational uses.

Specifically addressing the potential for postsecondary education to harness ITFS effectively, William T. Reed, PBS senior vice president for education, elaborates on the points made by Curtis and Thayer in a cogent overview of the PBS position on the FCC ruling and additional examples of effective ITFS educational systems. In his update on PBS's plans for a National Narrowcast Network (NNS), Reed cites the need for a national distribution and coordination effort to maximize the vast potential that ITFS systems hold for education and training. Beginning with a demonstration project next year, NNS will ultimately provide the capacity to program 24 hours a day with programs to address the educational needs for a variety of professions and occupations.

The ITFS "debate" has stimulated a lot of discussion among representatives of postsecondary institutions most concerned with the fate of this valuable educational resource. See the citation for "Telecommunications: Instructional Television Fixed Service: Recent Developments" under **Broadcast Television** in this issue of *TELESCAN*. Written by Susan Fratkin, director of special projects for the National Association of State Universities and Land-Grant Colleges, this article gives a good overview of the regulatory and political debate surrounding this issue.

In our next issue... the Center will sponsor a workshop at the 1984 AAHE National Conference, March 14-17, 1984 in Chicago... look for several articles on the impact of computer technologies on college and university planning with a commentary by Marc Tucker, Director of the Project on Information Technology and Education.

Happy holidays!

Marilyn Kressel

Marilyn Kressel
Director
Center for Learning and
Telecommunications

Information in each section of TELESCAN is categorized using the following symbols:

Articles

Books

Washington-based activities

Programs and projects

Legal/regulatory issues

Preserve the ITFS System

continued from page 1

were several systems, with valid licenses, that were in operation but were not cross-listed in the FCC records and printouts. We also found that other systems had ceased operations and planned to let their valid licenses expire, while still others had stopped operating but continued to renew their licenses in the hope of reinstating service at some time in the near future. As a further check, an ITFS Operations Analysis Study survey form was mailed to every known and pending system early this year, and these, too, were followed up with phone calls to verify reported capital investments, operating expenses, and personnel costs for each system....

Some of the findings:

- In the two years since the previous study, the number of operating ITFS channels increased by 27% (from 492 to 626) even though the number of operating systems increased by only 1%. Also, there has been a 41% increase in the number of students served during that same two-year period.
- ITFS consortia are growing. Those in Virginia (CenTeX®), Cleveland (Metropolitan), and the statewide systems in Indiana and South Carolina now, collectively, operate 83 channels and reach 6,719% more students than in 1980, at an annual per-student cost that is down 94% (despite a 279% rise in operating costs)....
- Per-student costs at the college and university level have risen by only 15%, despite a 46% increase in per-system costs, because of a 44% increase in the student population served.
- The per-student cost to medical schools is the highest—up by more than $30—mostly because of the 41% drop in the number of students and staff using ITFS services. Even at $50.78 per student per year, however, ITFS delivery of medical instruction is still a bargain.
- Overall, operating costs for ITFS systems have risen 106% (an average of 53% per year), yet the per-student cost of learning via ITFS has risen only 4%. To understand the significance of this figure, compare it to how much more we all pay today for food and housing than we did in 1980.

The study data also point up other factors:

- Today's ITFS operators are effective managers. During 1980–81, 21 ITFS stations went off the air, but during 1982–83, despite the economically troubled times throughout the nation, only one ceased operations.
- Educators have more than $150 mil-

lion invested in ITFS operations, and spend another $150 million each year to keep them on the air. Yet, taken together, those amounts represent only about half of the total investment, all of it non-federal money. Total investment in an ITFS system must include land acquisition and improvement in terms of buildings to house staff and equipment. Past experience has shown these costs represent about 23.5% of the total capital outlay required to build a user-supported ITFS network. NITC estimates that the nation's ITFS systems represent an investment of not less than $600 million—almost all of it funded privately—in America's only user-paid-for, nonprofit, public-service telecommunications endeavor.

The Technology of Modern ITFS Systems

What do the subscribers to ITFS sytems that deliver educational materials and other services get for their money? CenTeX© is typical of the progressive, multi-channel ITFS system that offers not only instruction, but a wide variety of other services. (Other systems around the country do the same.)

CenTeX is organized on the "backbone" principle, and the string of self-contained, partner stations that compose the network reaches for more than 100 miles from Virginia's capital, Richmond, to Virginia Beach on the Atlantic coast. It can serve 644,000 people, including those reached by CATV, throughout that area. A look at the CenTeX strategies and specifications will illustrate how it serves the hitherto unfulfilled educational/medical/social-service needs of this constituency.

1. *Two-way audio and video.* Users of CenTeX can establish a direct relationship between an educator, doctor, social worker, or lawyer and a remotely located student, patient, or client.

2. *Multiple channels.* Since it is a multi-channel network, CenTeX can serve multiple user requirements simultaneously and economically. This capability is especially valuable in areas like Miami or Dallas, where public services must be delivered in two or more languages.

3. *Multiple delivery technologies.* CenTeX can combine six telecommunication transmission methodologies: 1) open-air broadcast, 2) cable (CATV, including laser/fiber optics), 3) broadcast station sub-carriers, 4) standard telephone lines, 5) microwave, and 6) satellite. We can, therefore, choose or combine the method(s) that best meets user requirements at the lowest cost. Use of multiple transmission options also increases the geographic scope of the system, making it even more cost-effective.

4. *Use of existing facilities and expertise.* By making maximum use of delivery systems that are already operating for other purposes (cable, commercial station sub-carriers, PBS stations, telephone lines), CenTeX minimizes both capital investment for equipment and construction and the start-up time required to make its services available to users.

5. *Built-in telecommunications capabilities.* The system provides wide-band analog/digital circuitry for use by businesses and industries, a group not too often served by ITFS, but one which also could make cost-effective use of such systems.

6. *Protection of privacy.* Because it can provide privacy, CenTeX can offer such sensitive services as medical and psychological consultation; counselling for unwed teenaged mothers, or proprietary industrial training. Privacy protection also reduces copyright costs and risks.

7. *Temporary connection to the network from a mobile unit.* We designed and operate the nation's first mobile ITFS, two-way telecommunications station authorized by the FCC. This enables us to establish two-way telecommunications for users who need only occasional connection to the network and, therefore, cannot justify permanent installations....

8. *Independent/network operation for system stations.* Each station in the CenTeX system is self-contained and therefore can, and does, use its local channels for teleconferencing and/or distribution of locally needed information. Conversely, locally produced materials may go out to the entire network, and the network delivers general or specialized materials for use in the station's local area.

9. *Dual use of transmitters.* Local programming is delivered locally by the same transmitter that simultaneously transmits and receives signals to/from adjacent stations. This dual-purpose transmitter use substantially reduces both capital investment for equipment and maintenance costs.

10. *Training for on-camera users...* Instructors and practitioners require training if they have had no previous experience. By means of our "Four-Eyes" self-training system, the presenter uses a camera and videotape recorder to try out a presentation in private, study the results, and practice until he or she feels confident enough to go "on air."...

11. *Two-way, party-line capability.* All network students and presenters can hear all the questions and answers from all locations on the "party-line," which increases learning effectiveness and generates considerable interchange and discussion between independent, remotely located student groups....

12. *Local-line delivery of audio.* When charges for audio return lines become substantial, we provide system users with local numbers for calling the nearest system transmitter, thus saving long-distance charges.

13. *Evaluation of all projects....* Two qualified evaluators of educational/instructional materials directed the creation and testing of needs assessment, cognitive, and subjective evaluation techniques so we could monitor the progress of a project....

14. *Live delivery of original programs.* All first-time programming goes over the network live (including the two-way aspects) so real-time recordings may be made for subsequent analysis and rework. This procedure helps in the evaluation process and also provides more "dynamic," and instructionally efficient tapes (and support materials) for educators to purchase and use.

15. *Service to rural areas.* Most user-supported ITFS operations understand the critical need to deliver educational/medical/social services to the nation's rural areas. All of those who do follow a common, economically sound concept —the "backbone" systems serve populous urban and affluent suburban areas, which pay the costs of the materials, expertise, and delivery they need. To the "backbone" are added "rib" extensions which make these same, already-paid-for services available on a by-product basis to rural areas that cannot afford them....

16. *Materials and experiences that meet user needs....* Education is primarily an information-transfer process. This understanding is basic to the cost-effective use of telecommunications for such services and materials. The system design must provide: 1) efficient data and TV tranmission services, which means it must include broad-band digital as well as analog capabilities; 2) compressed-program transmission; 3) extensive use of simple graphics that are easy to view and understand; 4) data transmission for hard-copy printout; 5) the capability to permit use of interactive terminals; 6) computer access; 7) computer-based and computer-managed instruction; 8) multiplexed sub-carrier transmission, and 9) the capacity to deliver recently developed tools in the educational, medical, and social service areas on a cost-effective basis.

In the area of the development and

production of curriculum expertise and programming, the emphasis should be on content organization, clarity of presentation, and reinforcement through graphic illustration.... When done well, according to these parameters, such educational/medical/social services programming will not only increase the effectiveness of student learning, it will also decrease the time required to deliver a given "core" curriculum.... By reducing the time involved in program production, ITFS actually provides better instruction at lower costs.

17. *Built-in, continuing investment commitments from users.* Efficient management of an ITFS user consortium requires that the users make long-range financial commitments to insure the success of the operation. This gives them a direct interest in providing the system management with the needs assessment, program evaluation, and other research tools that are necessary for innovative and creative system operations....

18. *Freedom to operate.* If ITFS systems are to have a long life and economic viability, and if they are to remain developers and deliverers of public-service-oriented resources, they must remain free of possible local, state, national, or international dictatorial control....

Why, Then, Reallocate ITFS Channels?

In fairness to the FCC, more than ten years have passed since it first set aside 28 channels exclusively for ITFS, nonprofit, educational use, and these channels have not been uniformly utilized throughout the United States. In the ten largest urban areas, for instance, only 50% use all, or almost all, of the 28 channels fully. When you broaden the scope of your investigation to include the 50 largest metropolitan areas, the ITFS spectrum, in many instances, is not only not being used fully, it is not being used at all.

Nevertheless, ITFS operators point out that just as America would be most unwise to use its strategic metals stockpile or its military oil reserves, it is equally unwise to reassign a resource originally allocated to education to other purposes just because it is not being used at the present time. Education is one of the pillars of a democratic society—especially a technology-based society—and ITFS operators have clearly demonstrated that they are able to serve its needs. Therefore they feel that all of the originally allocated spectrum should continue to be reserved exclusively for the purpose of meeting America's existing and future educational requirements.

AUDIOSCAN

Articles, books, programs, and projects involving the uses of audio technologies.

Cable Radio

Applebaum, Simon. **"Serving the Handicapped."** *Cablevision*, September 5, 1983, p. 39. A report on an audio service for the handicapped offered by a cable system in Connecticut.

Radio

Simon, Sam and Ed Singletary. **"Public Access Radio: Opening Up the Medium."** *Access*, July 1983, pp. 1, 5. A proposal for the allocation of radio broadcast licenses for community access.

Teleconferencing

Downing, Diane E. **"Teaching and Meeting by Telephone: Audio Teleconferencing in Education."** *Educational Technology Update*, Summer 1983, pp. 1-4. A discussion of the uses of audio teleconferencing for education.

Teaching by Teleconference In Northern Virginia

With telephone conference equipment at four locations in Northern Virginia connected by an electronic bridge in Richmond, Northern Virginia Community College (NVCC) was able to preview college teaching by teleconference this summer.

More than 40 NVCC faculty and staff, participating from campus sites in Springfield, Loudoun, Manassas, and Woodbridge, were introduced to teleconferencing as an instructional delivery system.

NVCC's Alexandria campus has used teleconferencing for students enrolled in a business management course. Class instructor Fitz Woodrow confessed to having "some problems" when he began using the new technology. "Talking into a microphone was not my way of doing things," he said. But both he and his students were surprised at how quickly they adjusted to the new concept. "I've found that teleconferencing sharpens the content of my subject matter and the way I present it," he said. His students can question or comment any time from any location with the aid of special conference microphones.

Woodrow feels that using video and slide projection equipment, which can be handled by a student aide at each class location, adds variety to the teleconferencing classroom. He also said it is very important that faculty be available for counseling.

This fall two teleconference courses in music are being offered at NVCC. They originate on the Loudoun campus, and faculty members connect with students at the college's Woodbridge and Manassas campuses. Soon students will be able to earn a two-year associate degree in music completely through teleconferencing. By 1985-86, 25 courses will be offered, using the telephone as the primary mode of course delivery.

For further information, contact Kitty Maret, NVCC, 8333 Little River Turnpike, Annandale, VA 22003; 703/323-3196.

FIFTY YEARS AGO, A BATTLE OF IDEAS HELPED SIDETRACK PUBLIC BROADCASTING

In a reprint now available from *Current* newspaper, Eugene Leach, director of the American Studies Program at Trinity College, Hartford, gives a colorful, detailed account of the struggle between two conceptions of educational radio in the 1930s. Leach describes the early triumph of "Cooperation" that helped sidetrack the development of noncommercial radio.

"Tuning Out Education: The Cooperation Doctrine in Radio, 1922-38," is a 20-page reprint of a series that appeared this year in *Current*, with footnotes added by the author.

Single copies—$3 each, postage included. (For 10 or fewer copies, a check payable to "Current" must be enclosed.)

Ten or more copies—$1.50 each, plus postage. (We will bill you.) Ordering address: Current, Box 53358, Washington, D.C. 20009.

VIDEOSCAN

Articles, books, programs, and projects involving the uses of video technologies.

Broadcast Television

"Slow-Scan Brings Students and Faculty Together in University of Hawaii Experiment," by David Swift, *Communications News*, August 1983, pp. 32-33.

Slow-scan—also known as narrowband or freeze-frame TV—is a promising, low-cost form of telecommunications that occupies a middle ground between facsimile and regular TV. It has been used in some one-way installations in the Pacific.

Using borrowed equipment, a University of Hawaii professor has conducted a series of long-distance demonstrations to show the usefulness of interactive slow-scan. After an initial presentation of a public seminar on stereotypes to a church/university audience, slow-scan was used in a regularly scheduled class at the University of Hawaii.

The course was a specifically designed, interdisciplinary one that examined the process of geographical and scientific exploration, and focused on space scientists as examples of today's explorers. It used slow-scan to connect the university with NASA's Jet Propulsion Laboratory and Ames Research Center in California, an expert in Ohio, the National Air and Space Museum and NASA headquarters in Washington, DC. All of the meetings were interactive, allowing students to question the guest speakers.

The demonstrations and related training sessions suggest that there are at least three benefits to using slow-scan video in telecommunications: 1) it is useful in bringing together people who would otherwise not have the time to meet; 2) it is reasonably priced with low transmission costs; and 3) it is flexible in its technical requirements.

The outlook for slow-scan is dependent upon the availablity of telecommunication networks and acceptance of its "unglamorous" presentation. However, it seems particularly suited for the vast Pacific areas.

Brock, Dee. **"Telecourses: A Marriage of Television and Instruction."** *News for Teachers of Political Science*, Summer 1983, pp. 1-S2. A discussion of the use and future potential of television for formal learning.

Goodland, S. et al. **"The Use of Video for Training Engineers in the Presentation of Technical Information."** *Journal of Educational Television*, Vol. 9 (Summer 1983), 103-15. A description of a video system for skills training and professional education for engineers.

Gross, Lynn Schaefer. **"A Natural Alliance: LPTV and DBS."** *LPTV Currents*, July/August 1983, pp. 4A-5A. An examination of the relationship between LPTV and DBS as complementary services.

Gupta, Udayan. **"LPTV Links to FM, DBS Possible as FCC Readies License Lottery."** *Electronic Media*, September 1, 1983, pp. 19, 21. A look at the status of the FCC lottery to award licenses for LPTV stations and possible new directions for the industry.

Moss, J. R. **"Lifelong Education: The Contribution of Video."** *Journal of Educational Television*, Vol. 9 (Summer 1983), 97-101. A discussion of the role of television technologies in promoting lifelong education.

"Telecommunications' Instructional Television Fixed Service: Recent Developments." *Green Sheet*, August 16, 1983, pp. 17-19. An update on the FCC decision concerning reallocation of ITFS channels.

PBS to Air First CPB/Annenberg Project Course

"The New Literacy—An Introduction to Computers," a new 26-program telecourse on computer technology, will be included in the PBS Adult Learning Service offerings beginning January 14, 1984. The project, two years in preparation, is the first of the Annenberg/CPB Project courses to be broadcast in its entirety. It is available for use at universities and colleges throughout the nation, either through broadcast on their local PBS station or through nonbroadcast dissemination.

"The New Literacy" is a comprehensive, transfer-level introduction to computers. It covers the entire range of computer science, from the basic theory and the conceptual framework of data processing and computing in science and industry to the understanding and use of computers in students' personal and professional lives. It examines the application of computers in a broad range of settings and social environments.

Leaders in computer education, computer science textbook authors, computing consultants, and industry leaders participated in the course development and helped ensure the coordination and thoroughness of the print and video components of the course. The text selected for the course is *Information Processing*, written by Marilyn Bohl and published by Science Research Associates, Inc. (SRA). This text has been widely adopted and has established a reputation for excellence in the field. A comprehensive study guide, also available from SRA, has been designed specifically for students learning at a distance.

The 26 half-hour television programs are grouped into six learning modules: introducing computer concepts; computer system data flow; computer systems and applications; system design and programming; enhanced system capability; and computers and society. The production team traveled throughout the United States and interviewed more than 100 individuals who develop and use computer technology. Sequences were videotaped in a wide variety of computing environments including a computer camp for children, an attorney's office, the classified department of a leading metropolitan newspaper, a small plumbing establishment, an insurance company, a grocery chain, a fire department, a bank, a hospital, a computer manufacturer, a swine farm, and homes.

"The New Literacy" is one of the first projects funded by the CPB/Annenberg Project, established by the grant of $150 million to the Corporation for Public Broadcasting from the Annenberg School of Communications.

For additional information, contact Dee Brock, director, PBS Adult Learning Service, 475 L'Enfant Plaza SW, Washington, DC 20024; 202/488-5000.

Japan Establishes University of the Air

If all goes according to plan, Japan's University of the Air will accept its first students in early 1985. The new university's courses will be broadcast from its own UHF television and FM radio channels. Like the British Open University, after which it is modeled, the UA will also build study centers throughout the country, where its students will go every week to view films and videotapes, attend classes, take examinations, and receive counseling.

The UA has three major goals. First, it will give working adults and housewives a belated opportunity to earn degrees or complete university-level courses. Second, it will provide enrollment opportunities for 18-year-old secondary school graduates who are expected to be so numerous in the years immediately ahead as to exceed the capacities of the conventional universities. Third, by employing the broadcast technologies, the UA will present a kind of instruction suited to a new age and new audiences.

The UA promises to be a revolutionary kind of institution in other ways as well: It will admit its students on a first-come, first-serve basis in a country where admission normally hangs on the outcome of a single competitive examination. Planners anticipate that students may study for a year or so in the UA and then will want to transfer the credit earned to conventional universities and move from one school to another as undergraduates, now an infrequent practice in Japan.

The UA has been chartered by the Ministry of Education as a free-standing, degree-granting institution, with authority to award the bachelor's degree in liberal studies in three curricula: Natural and Applied Sciences, Humanities, and Social Sciences. Students should be able to earn the required 124 credit hours (including four credits in physical education) in four years. Planning and curricula are the responsibility of the National Center for the Development of Broadcast Education. Professors from various universities and colleges, private and public, are now at the Center preparing courses for radio and TV presentation.

The student body is expected to match in its characteristics those who are now enrolled in correspondence and broadcast courses currently offered by public and private universities, that is, made up of at least 60% white collar and civil service workers—which is not unlike the British Open University enrollment. UA planners argue that the job market in Japan is less oriented to "credentials" than that in the U.S. Hence, they are confident that the institution will attract large numbers interested primarily in intellectual and cultural growth.

The Japanese are deliberately opting for modest production, visually enhanced lectures and lecture-demonstrations, with the determination of course content turned over to the professor-presenter.

Like BOU, the Japanese University of the Air is an imaginative response to a pressing social need. Further information about the UA and media-based higher education in Japan can be obtained from the National Center for the Development of Broadcast Education, 2-Chome, Wakaba, Chiba-Shi, 281 Japan.

Cable Television

Brown, Les. **"The Coming Showdown Between Cable and Broadcasting."** *Channels*, July/August 1983, pp. 23-24. An analysis of deregulation's effects on the relationship between broadcasting stations and cable operators.

Buske, Sue Miller. **"Crossing the Nonbroadcast Line: Corporate Cable Programs."** *Video User*, July/August 1983, p. 12. A discussion of cable as a distribution medium for corporate video programs.

"Cable Issues Examined by FCC Chief." *CableAge*, August 29, 1983, pp. 52-53. An interview with the chairman of the FCC on issues affecting the cable industry.

Fields, Howard. **"Higher Franchise Fees, Upgrading in S.66 Cards."** *CableAge*, July 18, 1983, pp. 16-22. A report on possible results of passage of the cable bill currently before Congress.

Mills, Marta. **"County Cable Administration: The Kenton/Boone System."** *CTIC Cable Reports*, August 1983, pp. 1-2. A profile of a cable system administered by two counties in Kentucky.

Ottenberg, Jill. **"Who's Who in Cable LOP."** *Videography*, July 1983, pp. 42-43. A survey of video professionals involved in local origination planning.

Rothbart, Gary and David Stoller. **"Cable at the Crossroads."** *Channels*, July/August 1983, pp. 32-37. A view of the problems involved in building cable systems in urban areas.

Scherman, Bob. **"Local Origination—Bedford's Bone of Contention."** *E·ITV*, July 1983, pp. 46-49. A profile of franchising problems in Bedford, Massachusetts.

Spillman, Susan. **"Public Access Cable Building Audience."** *Electronic Media*, July 21, 1983, pp. 2, 23. An overview of the variety of programming offered over the nation's public access channels.

Videotext/Teletext

"Videotex/Teletext Services," by Morris Edwards, *Communications News*, August 1983, pp. 98-102

U.S. videotext and teletext services are coming into their own as a result of recent developments. The Federal Communications Commission finally gave the go-ahead for commercial service in April 1983. In a related industry move, CBS and NBC announced that they would soon offer videotext services.

Interactive videotext services were boosted by IBM and American Bell product introductions. At the Videotex '83 conference, IBM announced high-quality color graphics, videotext teleconferencing, and new programming aids for its videotext system. American Bell Consumer Products announced its Sceptre videotext terminal, which went on sale in Florida in September.

Among other developments:

- Results of the National Electronic Home Services Test, a consumer acceptance survey conducted in Michigan, indicate the "must have" potential of home videotext.
- A Booz, Allen study in New York City found that home information systems will explode into a $30 billion a year business by the mid-1990s.
- International Resource Development, a research firm in Norwalk, Connecticut, predicts that home computers will lead the consumer videotext market to the $1 billion mark by 1992.
- IBM is targeting its Series/1 videotext system to the business world, but software firms are equipping the IBM Personal Computer for home use. Other computer manufacturers are also becoming interested in videotext, such as Honeywell, Digital Equipment, and Radio Shack.
- The Viewtron service, a combined activity of American Bell and Viewdata Corporation of America, will offer subscribers a range of transactional services such as electronic banking and shopping as well as information retrieval services, entertainment, and help with such things as taxes.
- A rival to Viewtron, Videotex America—a joint venture of Times Mirror and Informart—will provide similar services.

The article also lists numerous other examples of videotext/teletext services in progress.

Behrens, Steve. **"CPB Sketches Teletext Strategy."** *Current*, September 13, 1983, p. 4. A review of a study sponsored by the Corporation for Public Broadcasting that urges PTV stations to team up with venture partners in order to offer teletext services.

"Electronic Publishing Moves Off the

Space Available for January Audio Teleconference

Thanks to all of you for your incredible response to our upcoming audio workshop, "Telecommunications: A Primer to Postsecondary Applications." So many institutions were interested in participating in the two-hour program that we have scheduled an additional date of January 12, 1984. There are still some slots available for the January 12 date, so if you or any of your colleagues are interested in participating, please don't hesitate to call our offices right away. Each site will be provided with resource packets, sample issues of *TELESCAN*, and two copies of Ray Lewis's *Meeting Learners' Needs Through Telecommunications: A Directory and Guide to Programs*. Each site may have as many participants as it wishes for the two-hour program which documents the extensive uses of the technologies in postsecondary institutions across the country. The cost, per site, including all materials, is $350. Be sure to call for more information.

Directory Price Discounted to $25 After January 1, 1984

Beginning January 1, 1984, copies of *Meeting Learners' Needs Through Telecommunications: A Directory and Guide to Programs*, by Raymond J. Lewis will be available at the discounted price of $25. For those of you who have not yet purchased a copy, this is the time to buy this important study of 70 model programs that use telecommunications to deliver postsecondary instruction.

As colleges and universities all over the country plan for the integration of new telecommunications technologies into their academic programs, *Meeting Learners' Needs* documents the increasing use of telecommunications by all types of postsecondary institutions. Every program manager, educator, and administrator should have a copy of the most comprehensive overview published to date on higher education's use of new technologies. And with the price discounted more than 40%, you can hardly afford not to.

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Drawing Boards." *Business Week*, August 8, 1983, pp. 54-59. A report on market projections for videotext services that are now becoming economically viable.

Gupta, Udayan. **"High Hopes of Videotex Toned Down by Reality."** *Electronic Media*, June 30, 1983, pp. 2, 23. A review of a videotext conference held recently.

Gupta, Udayan. **"Videotex Success Attracts Crowd of Suppliers."** *Electronic Media*, July 28, 1983, pp. 11-20. A report on several successful videotext trials that are scheduled to begin offering commercial services.

Kerr, Stephen T. **"Videotex at the Street Level: Public Acceptance of Viewdata Services in Great Britain."** *Videodisc/Videotex*, Summer 1983, pp. 196-205. An examination of public reaction to Britain's videotext services in comparison to experiences with trials in the U.S.

Urrows, Henry and Elizabeth Urrows. **"Videotex Progress and Trends in England and France."** *Videodisc/Videotex*, Summer 1983, pp. 206-14. A summary of developments in videotext use in France and England.

"Will Knight-Ridder Make News with Videotex?" *Business Week*, August 8, 1983, pp. 59-60. An overview of Knight-Ridder's investment in videotext with the first commercial service which debuted this fall.

Satellites

Bracco, Larry. **"Satellite Services in Chicago and the Midwest."** *Satellite Communications*, August 1983, pp. 32-34. A listing of organizations that are active in satellite communications services, both hardware and software, in the Chicago area.

Langereaux, Pierre. **"DBS in Japan."** *Satellite Communications*, August 1983, pp. 44-45. An analysis of direct broadcasting satellites in Japan.

Pollan, Michael. **"How the DBS Kids Stole Comsat's Thunder."** *Channels*, July/August 1983, pp. 39-41. A view of the competition between United Satellite Television and COMSAT to launch the first DBS service.

Vines, J. K. **"Satellite Television in the Canadian Arctic."** *Satellite Communications*, August 1983, pp. 36-37. A description of a satellite-delivered cable system for oil workers in the Arctic.

Installing Your Satellite Uplink: What You Need to Know, Public Service Satellite Consortium. Order from PSSC Financial Affairs Dept. [1660 L Street NW, Washington, DC 20036]. 1983. 50 pp. $350.

A guide to designing a satellite communications facility. This book includes an analysis of technical, operational, and economic decisions involved in installing and operating a satellite earth station. Also provided is a 22-step checklist and a sample floor plan and equipment list.

Teleconferencing

"Learning from Experience: Videoconferencing Lessons," by David L. Green and Kathleen J. Hansell, *Communication Business Review*, July/August 1983, pp. 23-27.

Videoconferencing offers great opportunity for improving the productivity of workers and their organizations. Taking advantage of the lessons learned by "early adopters" can be useful to newcomers today.

Two current types of videoconferencing are "special event" broadcasting, in which a broadcast is directed to a large audience at many receiving sites, and two-way, small-group, interactive videoconferencing, in which day-to-day problems can be discussed.

Major corporations have become more involved in interactive videoconference systems. Among them are Aetna, Xerox, Ford, IBM, Deere and Co., and Hughes Aircraft. Incorporated with electronic mail and voice messaging, videoconferencing can be a very useful tool for intraorganizational communication.

Green and Hansell identify certain lessons that have emerged:

(1) The benefits of videoconferencing are improved productivity as well as lower travel costs.

(2) There is no videoconferencing "black Model T," either for the videoconference room or for the network: Each system is unique.

(3) Organizational and user implementation issues are as important as the technology. Technology is necessary but insufficient by itself.

Brody, Herb. **"Reach Out and See Someone."** *High Technology*, August 1983, pp. 53-59. A review of developments that have encouraged more widespread use of teleconferencing by businesses.

Drasin, Bob. **"Avoiding the 'It's Sexy So We'll Do It' Trap."** *Video User*, July/August 1983, p. 18. A guide to issues for consideration before determining whether or not to hold a video conference.

Hansell, Kathleen J. and David Green. **"How to Make Your First Videoconference a Success."** *E·ITV*, August 1983, pp. 26-27. A guide to techniques for producing a successful videoconference.

Rhodes, Lewis A. **"Learnings of Videoconferencing from Project BEST."** *E·ITV*, August 1983, pp. 24-25, 63-64, 65. A review of the observations, generalizations, and guidelines resulting from Project BEST experiences with teleconferencing.

Vida, Mark A. **"A Look at the Terrestrial Alternative."** *Video User*, July/August 1983, p. 20. A discussion of considerations in evaluating microwave systems for teleconferences.

"Videoconferencing Edges into Corporations." *Video User*, July/August 1983, pp. 1, 31. A report on a survey regarding the status of videoconferencing.

"Videoconferencing Keeps Boeing Engineers Up-to-Date and Productive." *Communications News*, September 1983, pp. 32-33. A profile of the use of videoconferencing for communications between engineering groups within the Boeing Company.

Wesley, Michelle and Polly Rash. **"Teleconferencing Networks—Past, Present, and Future."** *E·ITV*, August 1983, pp. 48, 50-54. An overview of the variety of videoconferencing networks serving associations, government, education, and corporations.

"Where to Find Conferencing Services." *E·ITV*, August 1983, pp. 30-32. A listing of more than 100 organizations involved in videoconferencing services.

Videodisc

Leveridge, Leo L. and David S. Lyons. **"Which Disc Player for Education? A Comparative Evaluation."** *E·ITV*, July 1983, pp. 50-56. A comparison of videodisc hardware for use in education.

"Videodisc Projects Directory." *Videodisc/Videotex*, Vol. 9 (Summer 1983), 215-16. A compilation of videodisc applications in the public and private sectors.

VIDEOSCAN VI

Educational Device Using Laserdisc Announced

Whitney Educational Services of San Mateo has announced a new product that could extend the use of laserdisc technology in education and information storage. A demonstration of the device was held in early October in New York City. The product, dubbed the "Autodisc," uses a standard audiocassette tape to drive a videodisc player in much the same way that a slide/sound show controls a slide projector. It uses the videodisc as an "electronic slide tray" to provide not only still pictures but motion segments as well, all synchronized perfectly with the audiotape.

The Autodisc records a special digital signal on one track of the tape while the other track is used for narration. On playback the videodisc player responds exactly as it did during the initial recording, with single frames or motion sequences accessed immediately from any part of the disc. The Autodisc can stop motion, search, play forward or reverse, or access specific frames with pinpoint accuracy.

Literally hundreds of different presentations can be prepared using the same videodisc as a source of material. Each presentation can be conveniently stored and distributed on an inexpensive cassette tape. A University of Washington group has just completed a project to store biology teaching materials on videodisc. The Autodisc will be used to produce hundreds of biology lectures from the same disc.

According to Robert Whitney, founder of Whitney Educational Services, this product is a significant breakthrough that permits broad applications of videodisc technology where the cost was previously prohibitive. "I think it is difficult for most people to immediately recognize the full implications of this development," Whitney remarked. "This is an entirely new approach to the use of videodisc technology in education."

A single videodisc can store up to 54,000 still pictures per side. Entire "libraries" of visual information including photos, slides, graphics, charts, maps, film, and videotape segments can be stored on a single disc. With the Autodisc such a laserdisc recording can be used as a continuing visual resource for hundreds of unique audiovisual programs.

For more information contact Greg McKenzie, at Whitney Educational Services, 1777 Borel Place, San Mateo, CA 94402; 415/341-5818.

COMPUSCAN

Articles, books, programs, and projects involving the uses of computer technologies.

"Information Technology Literacy: Initiatives at Pepperdine University," by James I. Penrod, *EDUCOM Bulletin*, Summer 1983, pp. 11-15, 29.

Within each of Pepperdine University's schools and colleges, committees have been charged with developing specific programs related to information technology literacy (ITL). The university made the commitment on ITL in 1982 and plans to have an institution-wide plan operational by 1984.

The ITL plan includes instituting training programs for faculty, making networked microcomputers available to faculty and students on a university-wide basis, developing curriculum goals for implementation of ITL, and soliciting corporate and foundation support.

Among the intitiatives already underway are modification in the Ed.D. program, a new master's degree in computer education, and changes in the entire curriculum of the School of Business and Management. Public seminars in literacy also have been offered.

Other Pepperdine activities include: A National Summer Computer Literacy Institute, cosponsored by CAUSE and EDUCOM in June 1983; selection as one of four teacher training institutes in California to participate in IBM's $8 million computer literacy program, in which Pepperdine will work with Los Angeles-area high schools; a university-sponsored computer camp; a Computer Fair and Futures Conference for Educators; and a week-long institute on computer literacy for secondary school teachers, sponsored by the Graduate School of Education and Psychology.

Plans are underway for a large microcomputer purchase plan, networking, electronic mail, and education programs for students, faculty, and staff.

Computers

Alesandrini, Kathryn Lutz. **"Instructional Design for CAI Tutorials."** *Collegiate Microcomputer*, August 1983, pp. 207-14. A description of a course on designing computer-based tutorials that relates to the cognitive process of the learner.

Bork, Alfred; Stephen Franklin; David Trowbridge; and Werner Feibel. **"Current Projects at the Educational Technology Center."** *AEDS Monitor*, July/August 1983, pp. 18-19. An overview of projects involving research and development for computer-based learning at the University of California at Irvine.

Cowan, D. D. and J. W. Graham. **"Waterloo Microcomputer Systems for the 1980s."** *AEDS Monitor*, July/August 1983, pp. 11-14. An examination of the development of educational computing systems at the University of Waterloo, in Ontario.

Cushing, David. **"How to Make It Big in the Computer-Literacy Biz."** *Training*, August 1983, pp. 53-59. A view of the market for computer literacy training and the various media used to deliver it.

Danby, J. M. A. **"Learning Multivariate Calculus With the Help of the Computer."** *Collegiate Microcomputer*, August 1983, pp. 263-71. An overview of projects at North Carolina State University using computers to teach calculus.

"Effectiveness of CAI: A Different Finding." *Electronic Learning*, September 1983, pp. 58-60. A report on military studies involving computer-assisted instruction and the inconsistent findings between military training and student education.

Elmer-DeWitt, Philip. **"Mixing Suntans with Software."** *Time*, August 22, 1983, pp. 61. A view of the growing popularity of computer camps for adults.

Friend, Jamesine. **"The Future of Computers in Education in the Developing World."** *Development Communication Report*, September 1983, pp. 2, 14-15. A review of the development of computer-assisted learning in the U.S and projections of the most likely applications of the technology in the developing world.

Gordon, Sheldon. **"Faculty Training and Development in Academic Computing."** *Journal of Computer-Based Instruction*, Vol. 10 (Summer 1983), 51-54. A compilation of problems encountered by projects involved in the National Science Foundation's CAUSE program—a program to encourage the incorporation of computers into science curricula.

Greenwood, Frank and Richard F. James.

"Sensible Computer Advice." *T.H.E. Journal*, September 1983, pp. 107-108. A guide to selecting computer software and hardware for instructional, management, and administrative uses.

Harvie, Barbara. **"Library Applications of Microcomputers."** *Collegiate Microcomputer*, pp. 235-37. A discussion of the variety of applications of microcomputers in libraries and a list of information sources on the subject.

Hicock, Paul I. and Thomas B. Wiggers. **"PACOR and Two Programs for Computer-Assisted Instruction in Allied Health."** *Educational Computer*, July/August 1983, pp. 26-28. A profile of CAI software for allied health professions currently in use at the University of Mississippi.

"InfoWorld Report Card." A Supplement to *InfoWorld*. September 1, 1983, pp. 1-144. A review of microcomputer hardware systems.

Lee, Chris. **"HRD and the Computer Biz: Training Strategies in the 'Belly of the Beast'."** *Training*, August 1983, pp. 35-41. A view of training techniques used by professionals who work for computer manufacturing companies.

Lehman, James D. **"String Them Along: Practical Ideas in Introductory Programming for Educators."** *Collegiate Microcomputer*, August 1983, pp. 257-61. A discussion of the benefits of using string variables to introduce educators to computer programming.

McKye, Gordon G. **"Computers in Education—Software Cataloguing Project."** *AEDS Monitor*, July/August 1983, pp. 9-10. A profile of a project to catalogue public domain educational microcomputer software.

McLean, Robert S. **"Ontario Ministry of Education Designs Its Microcomputer."** *AEDS Monitor*, July/August 1983, pp. 15-17. A description of an initiative by the Ontario Ministry of Education to standardize microcomputer facilities in that province.

Pritchard, William H., Jr., and Donald Z. Spicer. **"The Vassar Computer Literacy Program."** *EDUCOM Bulletin*, Summer 1983, pp. 24, 32. An overview of the program at Vassar College to introduce faculty and students to computer resources.

Richards, Glenn. **"Public Interest Computer Association On-Line."** *Access*, July 1983, p. 5. An announcement of an association to serve the public interest community with information on computer applications.

"Using Computers to Learn Computing." *Training*, September 1983, pp. 33-36. A guide to computer software that will provide computer literacy training.

Wedman, John. **"The Future of Computers in Education: What Are the Right Questions?"** *T.H.E. Journal*, September 1983, pp. 147-48. An examination of the biases commonly held by those who plan for the future of computers in education.

Wierzbicki, Barbara. **"Massachusetts Starts State Computer-Literacy Program."** *InfoWorld*, August 1, 1983, p. 15. A report on a statewide computer literacy program linking government, industry, and schools.

Zemke, Ron. **"How to Conduct a Needs Assessment for Computer-Literacy Training."** *Training*, August, 1983, pp. 24-27, 30-31. A guide to matching learning needs to training options when planning for computer literacy training within an organization.

Computer Education for Colleges of Education, Association for Computing Machinery. Available from ACM Order Department [P.O. Box 64145, Baltimore, MD 21264]. 1983. 115 pp. $12.

A collection of reports from 15 colleges and universities on their programs for training pre-college teachers in computer education. This document is one in a series of special "topics" on education and includes suggestions on specific course content, as well as a discussion of the current status of computer education for pre-college teachers.

Computer Technology for the Handicapped in Special Educational Rehabilitation: A Resource Guide, International Council for Computers in Education [135 Education, University of Oregon, Eugene, OR 97403]. 1983. 190 pp. $7 prepaid.

A bibliography of books and resources on the applications of computer technology to aid the physically and developmentally disabled.

Interactive Video

Heyer, Mark. **"Computers and Video: Finding the New Edison."** *Videodisc/Videotex*, Summer 1983, pp. 181-86. A discussion of the characteristics and directions for the integration of computers and videodisc for use in education and business.

"Ford's Videodisc Network." *Video Systems*, August 1983, pp. 58-60. A description of the Ford Company's interactive videodisc system for product and sales training of employees.

Hon, David. **"Active Interaction: Advancing the Concept."** *Video Systems*, August 1983, pp. 19-23. A definition of interactive video and the categories of interactivity.

Rorie, Charles. **"Using Time-Sharing Computer System in the Classroom: Large-Screen Projection Television as an Interactive Teaching Aid."** *T.H.E. Journal*, September 1983, pp. 121-22. An overview of the instructional applications of an interactive display system at Dyersburg State Community College in Tennessee.

Wiegand, Ingrid. **"Easing Into Interactive Immediately—If Not Sooner."** *Video User*, September 1983, pp. 8, 18. An examination of a limited approach to developing interactive programs beginning with videotape and later incorporating computers.

Videotape/Computer Training System Arrives from Britain

In response to industry's growing need to retrain and redeploy its work force, the Omega Group, Inc. has introduced a technological advancement in training. CAVIS, the Computer Assisted Video Interactive System, combines the teaching capabilities of video, audio, and color graphics with computer-generated information. The system contains a microcomputer coupled with a videotape system.

"The training information presented by CAVIS invites a student's participation," said Richard Spivak, Omega president. "While other computer-assisted learning systems are text based, CAVIS engages the student in a totally integrated, multi-media presentation of text and audiovisual images on a single screen." Courseware is stored on videocassettes and floppy discs. Existing training programs on VHS may be incorporated, and original material on film, slide, or video is easily transferred.

CAVIS is a solution to training problems caused by fragmented recruitment, absenteeism, and a shortage of trained personnel. In spite of its tremendous fiexibility and power, it is extremely easy to use. No computer language or pretraining is required. The use of simple edit options enables the instructor to

tailor material from various media into a cohesive instructional program that can be altered as material or educational focus changes. Additionally, as the student progresses through the course, the system automatically logs his or her activity, allowing the instructor to analyze individual or group performance.

CAVIS is the result of the research and development effort sponsored by British Petroleum at the West Sussex Institute in England. Initial systems will be assembled and tested in Cleveland. The Omega Group, Inc., headquartered in Cleveland, markets CAVIS throughout North America. For further information contact Richard B. Spivak, president, The Omega Group, Inc., Two Commerce Park Square, 23200 Chagrin Boulevard, Cleveland, OH 44122; 216/464-5868.

MACROSCAN

Articles, books, resource documents, programs, and projects involving the uses of computer technologies.

"The Low-Skill Future of High Tech," by Henry Levin and Russell Rumberger, *Technology Review,* August/September 1983, pp. 18-21.

Although noting that high technology has become the newest "white knight" in the U.S., and educational system changes have been proposed, the authors suggest that proposed changes are based on false assumptions.

They state that the expansion of the lowest skilled jobs will "vastly outstrip the growth of high-tech jobs," and labor estimates indicate "that most job expansion will be in areas requiring little or no training beyond high school." Ironically, so-called high-tech jobs may even attract overeducated employees who find themselves unchallenged as the technology becomes routine.

High technology will not be a panacea for U.S. economic problems and may have a disturbing impact on the workplace and society in general. It has significant implications for education.

Excessive emphasis on specialized schooling will not prepare workers for the future. Rather than needing only to acquire new knoweldge to adjust to technological change, workers will also, and more importantly, have to learn different—rather than more demanding—skills. Most of these can be obtained through short training courses. There are indications within industry that employers prefer workers with a sound education and good work habits to those with narrow vocational skills.

Because specialized job skills will become obsolete rather quickly as technological advances occur, the authors suggest that it is likely that "the best preparation for adapting to this lifetime of change will be a strong general education . . . including a knowledge of different political, economic, social, and cultural tenets as well as the acquisition of strong analytical, communicative, and computational skills."

They conclude with an admonition that a "solid basic education will become more, not less, important" in the technological age.

Fields, Howard. **"Broad Copyright Issues Emerging in Washington."** *CableAge,* September 12, 1983, pp. 19-24. A discussion of efforts by the federal government to address new technologies, particularly those affecting the delivery of television.

Green, Alan. **"D.C. Developments."** *Videography,* July 1983, pp. 70-72. An overview of communications-related bills before Congress.

"How to Change Copyright Laws to Deal with the New Technologies." *Broadcasting,* July 25, 1983, pp. 29-30. A report on hearings before the House of Representatives on revisions to copyright law that would respond to current technological changes.

Leonard, W. Patrick. **"Economic Considerations Influencing Instructional Technology."** *Performance and Instruction Journal,* September 1983, pp. 26-27. A commentary on economic considerations that influence nontraditional instruction.

Ofori-Ansa, K. **"Africa's Search for Communication Technologies for Education: A Reflection on Problems and Prospects."** *Development Communication Report,* September 1983, pp. 3-5, 13. An examination of the problems and prospects of attempts to use mass communications technology for education in Africa.

Senese, Donald J. **"Innovations in Educational Technology."** *T.H.E. Journal,* September 1983, pp. 98-104. A discussion of federal programs to educate students about technology with technology.

The Catalog of Mass Media College Courses, 3rd edition, edited by James Zigerell. Instructional Telecommunications Consortium, American Association for Community and Junior Colleges. Available from AACJC Publications Sales [80 South Early Street, Alexandria, Va 22304]. 1983. 114 pp. $20.

A completely revised and updated catalog of more than 107 video and audio college-level courses available for use on a purchase or lease basis. The catalog is designed as a selective compilation of lower-division undergraduate courses. Entries are classified according to subject matter and include information about producer, production date, course content, production style, associated study materials, and availablity.

LearnAlaska Delivers Rural Education

To meet the growing need for instructional services for the rural communities of Alaska, the 1980 State Legislature established the LearnAlaska Network. The University of Alaska and the Department of Education jointly sponsor the network, which includes audioconferencing, instructional television, and electronic mail.

The LearnAlaska audioconferencing system is dedicated to educational use; first priority goes to direct instruction, while educational administrative uses have second priority. The system is a dial-up telephone-based conference network that enables groups of people to communicate statewide. LearnAlaska provides equipment and training for more than 150 sites.

Another service of the instructional telecommunications network is an instructional television channel delivering 22 hours of programming a day to more than 120 sites. By simply tuning into their television sets at home, Alaskans can view preschool, K-12, college-level, continuing education, and specialized programming.

MACROSCAN

Recent improvements in the ITV program include the increased number of site coordinators to help distribute LearnAlaska schedules and catalogs and to keep users informed on schedule changes; upgrading hardware to improve signal quality; and the launching of the state's own communications satellite.

In addition, University of Alaska students, administrators, and instructors use the University Network to exchange mail by computer. The Department of Education provides similar mail service to department personnel, public school districts, resource centers, and libraries.

Publications describing these and other LearnAlaska projects are available. For more information contact Jane Pollard Demmert, statewide director, University of Alaska Instructional Telecommunications Consortium, Office of the Statewide Director, 113 Bunnell Building, Fairbanks, AK 99701.

SECA Project Studies Adult/ Postsecondary Learning

The Center for Instructional Communications at the Southern Educational Communications Association (SECA) has received a grant from the Annenberg/ CPB Project to conduct market research for the further development and utilization of broadcast-delivered education by postsecondary institutions in the states represented by SECA.

The project will result in reports on the current status and future plans for educational telecommunications in each state and a regional plan for SECA members and the postsecondary institutions to collaborate in making these programs more available to adult learners.

For more information, contact Robert E. Carter, consultant, Postsecondary/ Adult Learning, SECA, 415 Clinton Road, Lexington, KY 40502.

Volume 2 Index Now on Sale

Copies of the index to *TELESCAN* Volume 2 are now available for $7.50. A complete, cross-referenced index to the more than 1,500 articles and reports on projects, programs, organizations and conferences, and references on telecommunications and postsecondary education included in six issues of *TELESCAN*.

To order your copy, check the appropriate box on the enclosed order form.

A Course for ITFS *continued from page 1*

dence and determine that the future educational needs of this country are more important than any short-term commercial exploitation of the microwave spectrum.

As for the second point, much clarification is still needed to determine how much latitude the FCC intends in permitting the leasing of excess capacity. PBS remains conceptually opposed to leasing, but we recognize that the rapid construction of ITFS systems might be facilitated through commercial arrangements with MDS operators. In the few short months since the FCC Report and Order, MDS operators have contacted virtually every ITFS licensee and hundreds of ITFS applicants asking that they sign deals to lease the as-yet undefined "excess capacity." PBS, which is an ITFS applicant in 102 markets, has been approached by several commercial interests. But before we take any action, PBS will be certain not to jeopardize the educational objectives of our ITFS channels. As PBS President Larry Grossman has advised PBS member stations, we will move cautiously and thoroughly in all decisions pertaining to our ITFS plans.

With that update on the FCC action, I will explain how PBS will use ITFS technology to the advantage of colleges and universities. Curtis and Thayer have spelled out the technical capabilities, the flexibility, and the broad potential of ITFS for higher education. In their effort to convince the FCC that reallocation of ITFS channels would be unwise, the authors have presented a compelling case for the promise that ITFS holds in our nation's educational fabric. I am delighted to have the opportunity to relate those hopes for the future to PBS' plans for the National Narrowcast Service (NNS).

Certainly, a host of local efforts such as CenTeX, described in the accompanying article, are already underway to use technology to deliver education and training to schools, businesses, colleges and universities, and civic centers. Another is California State University at Chico, where an ITFS system extends the university's reach to some 600,000 geographically dispersed people, many of whom previously had no immediate access to quality higher education.

The South Carolina Educational Television Network is developing the largest coordinated ITFS operation to date, with 66 local ITFS systems and more than 500 receive locations to provide continuing education and professional training.

In additional cities throughout the nation, school districts, public television stations, colleges and universities, and others are utilizing ITFS to fulfill local educational demands. Yet, while dozens of successful examples exist, hundreds of communities are not served by specialized educational opportunities. Indeed, PBS research indicates that without a national distribution and coordination effort, the use of technology for education will remain severely inadequate and radically uneven.

For the past two years, PBS has been exploring ways that it can help coordinate ITFS activity and extend its own educational services beyond those that are delivered via traditional broadcast technology. Our aim is to effect significant economies of scale by aggregating resources for program production and acquisition, and by using public television's existing satellite interconnection system for distribution of programming to local communities. The outcome of our exploration is the proposed National Narrowcast Service (NNS), which can be a major resource for all local ITFS systems that wish to share in the benefits of nationally coordinated educational program services.

As it is currently being considered, the NNS will establish local links between public television stations and other ITFS licensees and local institutions, thus creating sound community partnerships as the foundation for the national plan. Colleges and universities will work with local ITFS systems to offer accredited, college-level courses on-site at such receive locations as businesses, community centers, and government buildings.

The implications of the NNS for higher education are boundless. Adult learning has caught the nation by storm and, according to the College Board, more than 60 million people over age 25 are engaged in learning activities. Still, only about one-third of these learners are enrolled in colleges and universities. Most enroll in training programs at work or attend seminars developed by trade and professional associations; others participate in conferences, take part in non-credit courses offered by community organizations, or just study on their own.

Within most colleges and universities, planners are aware that they must find new ways to serve these adult audiences and, particularly, to retain a primary role in postsecondary education. Many of these institutions see linkages with business and industry as holding the most promise, yet often, these alliances fail because colleges are unable to adapt their existing processes to the needs of their business clients.

Using ITFS for Higher Ed

More and more, colleges are seeking ways to deliver academically sound, instructionally effective, and cost-efficient education and training at sites and times that are convenient for working students. Already the more than 600 colleges and universities that participate in the PBS Adult Learning Service have found that television provides such services directly into the homes of students. Extending this acceptance to the delivery of more specialized courses, as well as other education and training programs, directly to the workplace via the NNS will allow colleges to assume a leading role in on-site education.

The construction of the NNS will be a monumental undertaking, but it is one whose rewards will far exceed the complexity of the tasks. In time, the NNS can provide educational seminars, workshops, and courses for managers, lawyers, secretaries, doctors and nurses, pilots, pharmacists, engineers, science and math teachers, and hundreds of other discrete audiences.

We look to the day that we will offer programming on four channels, 24 hours a day, in some 200 communities. But that is several years away and the educational need is immediate and urgent. Therefore, PBS will launch the NNS with a demonstration project next year in communities already equipped with ITFS systems. Among the programs the NNS will carry are formal college credit courses, academic and vocational; specialized programs and series for in-service career training; professional development, including relicensing opportunities; and issues programming about professional and technical activities and current developments in specialized fields.

Throughout our planning, we will continue to consult leaders in higher education and business and industry to be sure that the service we provide via NNS and ITFS will, indeed, be a positive application of this technology for colleges and universities.

Contributors

Contributors to this issue of TELESCAN are listed below. The efforts of these individuals have been critical to our monitoring activities. ***We urge those of you who wish to become part of this important information network to submit to TELESCAN items of potential interest to our broadly based audience.***

Jane Demmert
University of Alaska
Peter Dirr
Corporation for Public Broadcasting
Diane Downing
Southwest Educational Development Laboratory
Hyman Field
Corporation for Public Broadcasting
William Reed
Public Broadcasting Service
James Zigerell
American Association of Community and Junior Colleges

Periodicals

Abstracts and bibliographies appearing in this issue of *TELESCAN* cover the period between July 15, 1983, and September 15, 1983. Below is a list of periodicals reviewed for this issue that do not appear in our original list of publications (September/October 1981):

Educational Technology Update
Southwest Educational Development Laboratory

News for Teachers of Political Science
American Political Science Association

Center for Learning and Telecommunications
One Dupont Circle, Suite 600
Washington, D.C. 20036
202/293-6440
Director: **Marilyn Kressel**
Research Director: **Raymond Lewis**
Communications Coordinator: **Karen Sibert**
Secretary: **Heidi Kenaga**
The Center is supported by the Carnegie Corporation of New York.

Telescan
Editor: **Marilyn Kressel**
Managing Editor: **Karen Sibert**

AAHE
AMERICAN ASSOCIATION
FOR HIGHER EDUCATION
ONE DUPONT CIRCLE, SUITE 600
WASHINGTON, D.C. 20036

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The Digest of the Center for Learning and Telecommunications VOLUME 3 ISSUE 3

Evolving Computer Networks In American Higher Education

John W. McCredie, president of EDUCOM, and William P. Timlake, secretary to IBM's Corporate Technical Committee. Excerpted from an article appearing in EDUCOM Bulletin, Summer 1983.

Heterogeneous computer networks are growing in an uncontrolled, almost chaotic manner to support the expanding needs of scholars and administrators in American higher education....

Networking activities are moving in many different directions. Recent testimony before congressional committees called for governmental actions to encourage the formation of computer networks that would link all scientific disciplines and make supercomputers easily accessible to researchers. The National Science Foundation is supporting the development of CSNET, a network for the computer science research community, with grants and contracts totalling about $5 million. Other academic networks are springing up with almost no formal planning and/or budget because a particular technology exists and individuals want to use it to communicate (e.g., BITNET—*"Because It's Time"*). Individuals on campuses throughout the country are evaluating dozens of local area networking options, and many managers are concerned about gateways to connect their network with others....

Computer networking, like many other technical concepts, is difficult to define well because it means different things to many people. For the purposes of this paper we shall concentrate on networks having the following features:

- a system of interconnected, autonomous computers, terminals, and communications facilities
- at least national in scope with significant academic usage
- availability of special software to manage resources in the network
- lists of host computers and users with their associated network addresses.

The term "network" is often used to refer to both a collection of computers and communication hardware (physical network) *and* the groups of individuals connected by telecommunication links (logical network). A particular computer may be part of several different physical networks at the same time. More often, an individual will belong to more than one networking group, possibly on different physical networks....

Most higher education networks are based on the diverse needs of many individuals rather than on one underlying large system required to support the

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Computer Vendors Donate Equipment To Colleges and Universities

Peggy Brown. Reprinted from the May/June 1983 issue of The Forum for Liberal Education.

As administrators and faculty members debate their long-term computing needs, several major computer vendors have introduced equipment and/or cash donation programs which address immediate research, equipment, and development requirements. In a recent telephone survey I discovered that most company spokespersons freely admit that their programs are a good way for potential customers to become comfortable with their equipment and thus more inclined to make future purchases from the donator. At the same time, several spokespersons emphasized their genuine commitment to education. Here follows a brief description of some of the activities of these companies.

"Computers are here and they're part of our lives," says Frances L. Carney, education grants coordinator for the Apple Education Foundation. "We want to help educators do what they can with them for the kids' benefit." Since 1979, the nonprofit arm of **Apple Computers, Inc.**, has donated nearly $1 million worth of microcomputers to educational insti-

continued on page 2

In this issue . . .

Reprint series traces history of educational radio ..... page 3
Research findings and faculty accounts of telecourse use ..... page 4
Guide to selecting computer systems for libraries ..... page 8
University of Oregon receives gift of personal computers ..... page 8
Articles on military use of computer-based training ..... page 7
Profiles of instructional applications of interactive videodiscs ..... page 9

SCAN

A guest editorial by Marc Tucker, director of the Project on Information Technology and Education

It might at first seem that the articles on computer networks, by John McCredie and William Timlake, and on sources of financial support for the purchase of computer workstations, by Peggy Brown, make strange bedfellows. Not from my point of view. The first lays out just a few of the many benefits that might be derived from one rather specialized use of the systems now being installed on many campuses. The other asks, with respect to to another part of the system—workstations—"How are we going to pay for it?"

The explosion in the use of communications and computer technology on campus comes at a time of swiftly rising costs for higher education, costs that almost everywhere are outpacing growth in revenues. This is interesting because the costs of acquiring this technology are very large in relation to the budgets of most institutions. Not only is initial cost high, but future costs are unknowably large because availability of the technology to people who have not used it before creates demand among those people for more and better technology. This in turns makes possible new applications, which again leads to greater demand.

As revenues decline in higher education as a function of demographic trends, the competition to attract the remaining students gets more intense. The brightest, and often the most prosperous, prospective students are asking which institutions offer the best opportunities to use computers in their areas of study. The institution that stacks up well on this criterion will find it easier to attract students than one that does not. One element in competing well on this dimension is having key faculty and staff who are highly competent in the fields of computers and communications. It is hard to get such people unless the computer and communications facilities available are at or close to the state of the art.

Whether to attract staff or students, a college or university may find that it must make ever-increasing investments in information technology.

Where will the money come from? Peggy Brown's article on computer firms' donation programs is misleading in this respect, though certainly not deliberately. There are gift programs and substantial educational discounts available, and there will continue to be. However, no firm is in business to give its products away. The very large sums presented by some of the major manufacturers to Brown, Carnegie-Mellon, and MIT are given in the expectation that the firms will reap substantial benefits through proprietary rights to software and systems coming out of those universities in the course of their experiments—products those firms will be able to sell in both business and education markets. Few institutions will serve as test beds, and those that do will only be partly underwritten by firms. Those that are not test beds will be seen as markets. No college or university, therefore, can expect a single firm or any combination of firms to underwrite all or even most of their initial and ongoing expenses for information technology.

McCredie and Timlake are right: Properly designed networks will greatly increase the convenience of performing many functions associated with research and scholarship. Specialized computer conference networks provide easy access to data and print resources located on and off campus. Combined voice, video, and data systems make it possible to reduce the rapidly rising costs of maintaining separate facilities to perform these functions. But increased convenience may be purchased by many institutions at the price of institutional survival if they do not figure out how to make their investments in information technology pay off in terms of the market they serve—either with a higher quality product or an expanded clientele. Something, in other words, that will justify charging a higher price for their product than the already high prices they now charge, or that will enable the institution to spread its fixed costs over an expanded student body.

The choice of avoiding information technology will not be available to many institutions, for all the reasons cited; the nose of the camel is already way under the tent.

Computer Vendors Donate Equipment to Colleges

continued from page 1

tutions for the "development of new learning methods." The usual donation is a complete Apple IIe system. Grantees distribute the software packages developed with Apple equipment through the publisher of their choice.

In March 1983 the foundation awarded equipment for activities ranging from the development of computer-aided instruction modules in legal decision-making and problem solving at the University of North Carolina at Chapel Hill to Carleton College's program in international diplomacy, which includes a computer simulation of the negotiations conducted during the imprisonment of the American diplomats in Iran. . . .

For more information, send a postcard to Grants Information, Apple Education Foundation, 20525 Mariani Ave., Cupertino, CA 95014.

The emphasis at **Atari, Inc.'s** Institute for Education Action Research is on "finding new and innovative uses for home computers," says A.J. Sekel, public relations manager. Atari awards grants of equipment and/or cash, depending upon the applicants' needs. During its first year, the institute has supported a project at the Bank Street College of Education on how electronic technologies, such as microcomputers, affect children's development. Additional projects include work by psychologists at California State University at Fullerton who are developing children's problem-solving and critical thinking skills, and the construction of a model space shuttle which uses computer integrated simulations by students at Greenfield Community College.

Persons interested in receiving additional information can write to Sandra Williams, manager, Program Development, Atari Institute for Education Action Research, Atari, Inc., 1196 Beregas Ave., P.O. Box 427, Sunnyvale, CA 94086. Application to the institute is a two-step process, including an initial screening of project abstracts by institute staff before acceptance of full applications. The institute also coordinates a scholar-in-residence program for in-house research projects.

Believing that the United States is headed for a shortage of engineers in the face of expanding technological needs, **Control Data Corporation** announced its 110 grants program in February 1983. According to a company spokesperson, Control Data will award PLATO computer-based pre-engineering courses and Control Data 110 microcomputers

to 110 colleges and universities across the country.

During the program's first phase, grantees will use the PLATO materials in mathematics and science courses for pre-engineering freshmen and sophomores. They will have the option of applying for the program's second phase, which will include the integration of PLATO materials into other disciplines at the high school level. For further information, write to Control Data at Box O, Minneapolis, MN 55440.

Digital Equipment Corporation is also interested in the education of future engineers, according to Nancy Dube, manager of corporate contributions. During 1982, Digital donated more than $45 million in equipment and cash contributions to colleges and universities for "the enhancement and expansion of their engineering and computer science programs, the encouragement and support of students pursuing careers in engineering and science, and the encouragement of greater research activity."

Examples of funded activities include special programs targeted at helping such groups as minority students, women, and urban residents prepare for engineering and computer science careers. Program staff prefer a "major Digital presence" in the community in which an educational institution is located. "We look at all contributions as investments which are of mutual interest to the company and the educational institutions in terms of developing a long-term relationship," says Dube. For further details, write Corporate Contributions Administrator, Digital Equipment Corporation, 129 Parker Street, PK3-2/K36, Maynard, MA 01754.

Administrators interested in receiving donated equipment from **International Business Machines Corporation** (IBM) often have to wait for "the knock at the door," according to Peter Singer, program manager in information activities. Managers at various IBM offices have the authority to donate surplus equipment to nearby institutions or make charitable donations based on a particular need, such as training the handicapped. For this reason, local managers try to keep informed on what colleges and universities are doing in areas which may be of interest to IBM.

In March 1983, IBM announced a computer literacy program for secondary schools, which is also based on their selections rather than submitted proposals. Twelve teacher training institutions in California, New York, and Florida will receive 15 personal computers each for the training of inservice teachers at nearby high schools. In turn, the 84 high schools will receive 15 personal computers to assist in the integration of computer instruction into traditional courses. The Educational Testing Service is assisting with the training.

In addition to standard research contract arrangements, IBM also awards unsolicited grants to departments and graduate students for unrestricted research. Information on these programs is available from IBM Director of University Relations, IBM, Old Orchard Rd., Armonk, NY 10504.

Although **Wang Laboratories, Inc.** has been active in donating equipment in its home state of Massachusetts, a company spokesperson declined to discuss a future program which will be donating equipment in other parts of the country.

Readers may also wish to investigate donation programs organized by office automation suppliers such as **CPT Corporation**. CPT recently expanded its donations of word processing equipment to areas outside Minnesota. Activities must focus on producing more science and high technology graduates, says Donna Munger, manager of corporate communications. She asks applicants to demonstrate their commitment by fostering students' literacy in science and mathematics and interest in high tech careers. For more information, write to Munger at CPT Corporation, P.O. Box 295, Minneapolis, MN 55440.

Information in each section of TELESCAN is categorized using the following symbols:

Articles

Books

Washington-based activities

Programs and projects

AUDIOSCAN

Articles, books, programs, and projects involving the uses of audio technologies.

Radio

Tuning Out Education: The Cooperation Doctrine in Radio, 1922-38, by Eugene Leach. Available from *Current* [Box 53358, Washington, DC 20009]. 1983. 20 pp. Single copies $3 prepaid; ten or more copies $1.50 plus postage.

An account of the evolution of educational radio. This reprint of a series that appeared in *Current* newspaper in 1983 also describes the struggle between noncommercial and commercial broadcasting.

Teleconferencing

McDaniel, Marlene and Virginia Ostendorf. **"A Speedy Way to 'Reach Out' and Teach Employees: Teletraining."** *Bank Marketing*, November 1983, pp. 42-43. An overview of a training program delivered via teleconferencing at the United Bank of Colorado.

Telephone

"The Impact of AT&T Divestiture on Higher Education." *NASULGC Green Sheet*, October 3, 1983, pp. 10-14. An explanation of the problems facing higher education as the telephone system reorganizes.

VIDEOSCAN

Articles, books, programs, and projects involving the uses of video technologies.

Broadcast Television

"A Study of Student Attitudes Concerning Instructional TV," by John D. Abel and Kent W. Creswell, *E·ITV*, October 1983, pp. 72-79.

Michigan State University has used a closed-circuit instructional television system since the mid-1950s for high-enrollment courses. Some 63,000 students took more than 400 courses with ITV in 1981. As a result of this widespread use, the institution is especially concerned with its effectiveness and acceptability, and MSU has surveyed students periodically.

Recently, staff decided to conduct new research to help provide feedback to faculty using ITV. Students in six different courses were surveyed over nine terms. The courses included introductory accounting and financial administration, introductory advertising, and a group of computer science courses.

Trained and supervised student interviewers from the Department of Telecommunication conducted telephone interviews with a random sample of students in the courses. The survey instrument was a branching-style questionnaire.

Questions covered student attitudes on course content, difficulty in learning the course material, comparisons with "live" instruction, and overall satisfaction with ITV as a teaching method. Other students, who attended live lectures, were also surveyed.

Results showed that positive student attitudes are widely distributed across the range of courses. Besides providing faculty with alternative evaluations of their teaching procedures, these surveys also indicate areas for new research (e.g., which students are more inclined to choose ITV, faculty attitudes, why students do or do not watch playbacks).

Allen, Robert G. **"Intricacies of the LPTV Lottery."** *LPTV Currents*, September/October 1983, pp. 6, 20. An explanation of how the FCC lottery to select LPTV licensees works.

Danoff, Leslie. **"First Low Power Lottery September 29."** *LPTV Currents*, September/October 1983, p. 1. A review of the steps involved in preparation for the LPTV lottery held at the FCC.

Gupta, Udayan. **"Interest in LPTV May Be Declining."** *Electronic Media*, October 13, 1983, pp. 3-14. A discussion of major problems with the development of low-power service.

"Hearing-Impaired Group Loses Court Appeal." *Broadcasting*, November 14, 1983, pp. 58, 60. An update on the court decision denying an order for the government to require open captioning by public television stations.

Hopkins, George W., Jr. **"The New ITFS System in South Carolina."** *E·ITV*, September 1983, pp. 50-52. A description of the new ITFS network that will replace the statewide closed-circuit system in South Carolina.

Milne, A.D.G. **"The BBC's Educational Posture."** *Journal of Educational Television*, Vol. 9 (1983), pp. 175-78. An examination of the BBC's commitment to educational broadcasting.

Phillips, Barbara L. **"Las Vegas Policemen Train Via PTV and ITFS."** *E·ITV*, October 1983, pp. 80-83. A profile of a cooperative venture between a public television station and a local police department to provide education and training over closed-circuit ITFS channels.

Reaching New Students Through New Technologies, edited by Leslie N. Purdy. Kendall Hunt Publishing [24609 Kerper Blvd., P.O. Box 539, Dubuque, IA 52001]. 1983. 434 pp. $24.95.

A collection of essays on the status of and research findings on the use of television for adult education. This book was compiled by Coast Community College, in California, and includes articles, reports, and speeches from other institutions as well.

Teaching With Telecourses, edited by Alexis Hillman. Available from CLEO [37 S. 16th St, Philadelphia, PA 19102]. 1983. 37 pp. Free.

A compilation of presentations from a workshop for college telecourse faculty, focusing on personal accounts of faculty experiences with telecourses.

National University Consortium Admits International Members

The National University Consortium, this country's first national distance education organization, has opened membership to English-speaking institutions and cultural organizations worldwide, thus becoming the International University Consortium for Telecommunications in Learning. IUC (formerly NUC) came into being when the consortium's board of directors changed the organization's name and by-laws to transform it into a truly participatory, international organization. Two Canadian higher education institutions are the first non-U.S. members. Athabasca University in Edmonton, Alberta, and the Open Learning Institute (OLI) in Vancouver, British Columbia, both well respected distance learning institutions, are expected to play active roles as consortium members.

IUC will be adding Canadian content to both its adaptations of British Open University courses and to its own original courses. The first such content will begin to appear in IUC courses in about a year. The consortium also hopes to begin adapting courses developed originally by OLI and Athabasca for use by other members, both in Canada and the United States.

The consortium now has 20 university and college members and 21 affiliated broadcasting systems in the U.S. and Canada—a threefold increase since its inception some four years ago. Student enrollments also have continued to grow, with more than 4,000 adult students having successfully completed IUC courses through their local institutions. The addition of Athabasca University and the Open Learning Institute as consortium members, and ultimately, other Canadian institutions of higher education, will be a milestone in cross-cultural education. "For the first time, as far as we know, information on Canada will be a regular part of college courses and available to adult students in the U.S.," reports Allan Hershfield, executive director of IUC.

The consortium will continue to explore partnerships with English-speaking universities and cultural institutions worldwide.

For more information, contact Allan Hershfield, executive director, IUC, Maryland Center for Public Broadcasting, Owings Mills, MD 21117; 301/356-5600.

Cable Television

Easton, Ken. **"A New U.S. Cable Telecommunications Act."** *Cable Communications*, September 1983, pp. 5-7. A discussion of developments leading to the passage of new cable regulatory policy in the U.S. Senate.

"The Exploding Home Computer Population and the Future of Two-Way Cable." *Cable Communications*, September 1983, pp. 25-28. A review of findings from a study that evaluates the impact of divestiture on data transmission services for the home, and the roles of cable operators and telephone companies in this market.

Fields, Howard. **"Cable, Telcos Intensify Data Transmission War."** *CableAge*. October 10, 1983, pp. 15-19. A view of the confrontation between cable operators and telephone companies over data transmission services.

"Urban Franchising Update." *CTIC CableReports*, September 1983, pp. 1-2, 8. An overview of the status of cable franchising in several urban centers.

Wolfsohn, Thomas E. **"Institutional Networks."** *CTIC CableReports*, October 1983, pp. 4-6, 18. A description of applications for nonentertainment cable networks.

The Consumer and Cable in California, California Public Broadcasting Commission, [915 Capitol Mall, Suite 235, Sacramento, CA 95814]. 1983. 126 pp.

A report on how consumers in California are served by cable communications. This document reviews public, education, and government uses as well as obstructions to cable growth from both the business and service perspectives.

Videotext/Teletext

Canape, Charlene. **"Realism Sobers Up Videotex Industry."** *Electronic Media*, October 27, 1983, pp. 1, 10. A report on new attitudes in the videotext industry as widespread acceptance of the technology has not reached anticipated levels.

Gupta, Udayan. **"Videotex Information Aims Its Product at Business User."** *Electronic Media*, October 13, 1983, pp. 15-16. A report on a new service for business users—an electronic product catalog.

"The Videotex Conundrum." *Monitor*, October 1983, pp. 9-10. A discussion of the major areas of controversy surrounding the development of videotext in Europe and North America.

Yeates, Nicola Jo. **"Primary Telesoftware."** *Journal of Educational Television*, Vol. 9 (1983), 179-82. A profile of the British Telesoftware and Education Project, demonstrating the feasibility of using teletext as a means of distributing software to microcomputers in schools.

Satellites

"DBS Set to Debut." *Broadcasting*, November 7, 1983, pp. 74-75. A discussion of United Satellite Communications Inc.'s decision to launch the first DBS service despite a lack of programming.

"DBS Still Tentative Despite Companies' Plans." *Electronic Media*, September 22, 1983, pp. 17, 19. A review of the consensus of panelists at a seminar on DBS financing, programming, and satellite equipment.

"FCC Makes Ready to Award DBS Slots." *Broadcasting*, October 10, 1983, p. 38. A report on FCC action establishing rules for orbital slots and frequencies for eight approved DBS applicants.

"Murdoch Puts DBS on Hold." *Broadcasting*, November 14, 1983, pp. 76-77. A report on a DBS venture postponed due to lack of transponder power, programming, and home dishes.

Teleconferencing

Cross, Thomas B. **"Getting Started in Teleconferencing."** *Business Communications Review*, September/October 1983, pp. 14-18. Suggestions and guidelines for conducting meetings with the new teleconferencing technology.

Degnan, Kim E. **"The Teleconferencing Industry as the Experts See It."** *Satellite Communications*, October 1983, pp. 38-40. A review of comments on the status of teleconferencing by several industry leaders attending the Satellite Communications User Conference.

Downing, Diane. **"Teaching and Meeting by Voice and Picture: Video Teleconferencing in Education."** *Educational Technology Update*, Fall 1983, pp. 1, 4. An explanation of video teleconferencing technology and its applications for business and education.

Greenleaf, Barbara Kaye. **"Teleconferencing: Up and Comer in the Fifth Estate."** *Broadcasting*, October 17, 1983, p. 19. A commentary on the prospects of teleconferencing as another facet of broadcasting.

"A Question of Charisma." *E·ITV*, September 1983, pp. 24, 30. A discussion of many of the drawbacks encountered in teleconferencing, as well as reports on meetings, services, and equipment.

"Teleconferencing Report." *E·ITV*, September 1983, pp. 24-28. A listing of several teleconferences held for a variety of purposes and audiences.

Videodisc

Galloway, Emily and Judith Paris. **"Information Providers and Videodisc/Optical Disk Technology."** *Journal of the American Society for Information Science*, Vol. 34 (1983), 414-16. An overview of applications of videodiscs by information providers.

Paris, Judith. **"Basics of Videodisc and Optical Disk Technology."** *Journal of the American Society for Information Science*, Vol. 34 (1983), 408-13. A description of videodisc and optical disc technology, including future applications.

Shea, Tom. **"'Doctor Disaster' Uses Videodiscs to Teach Physics."** *InfoWorld*, October 10, 1983, pp. 16-17. A report on the use of videodiscs at Kansas State University for physics instruction.

Strong, Harry and David H. Lehman. **"Videodisc Research at the MITRE Corporation."** *Journal of the American Society for Information Science*, Vol. 34 (1983), 433. A review of projects underway at the MITRE Corporation studying civilian and military applications of videodiscs.

Sustik, Joan and Terrence A. Brooks. **"Retrieving Information with Interactive Videodiscs."** *Journal of the American Society for Information Science*, Vol. 34 (1983), 424-32. A look at videodisc applications for indexing, searching, and retrieving information in a variety of settings.

"Videodisc Design: Solving Technical Headaches." *Training*, November 1983, pp. 85-87. A profile of the design of an interactive videodisc training program developed by the Florida State Health and Rehabilitative Services Department.

Videotape

"Practicing Law Via Videotape," by Sammy R. Danna, *E·ITV*, November 1983, pp. 70-74.

Loyola University's School of Law, winner of awards for excellence in teaching trial advocacy, makes ample use of videotape for instructional purposes.

Faculty and administrators, recognizing the need for students to practice their trial skills, saw to it that a new building at the law school was equipped with video in every classroom and lecture hall. A 110-seat lecture hall has three color units, and the 50-seat moot courtroom has four. All units are used frequently.

The law school faculty feels strongly that students must practice in front of television, "because video is an integral part of many courtroom procedures in many states." Video also is used for depositions and wills.

Besides the desirability of training lawyers to be comfortable with video once they are practicing, Loyola emphasizes the advantages of video as an instructional tool. The law school holds "trial-practice workshops" twice a year and videotapes the proceedings. In addition, instructors hold individual critique sessions for students. Both positive and negative charcteristics exhibited during the mock trials are analyzed.

The law school's Media Services Office provides technical support for faculty members using tape. Most of the productions are simple and straightforward. There are plans, however, for trying remote production sometime in the future when funds and personnel become available.

Anderton, Ray L. **"The TV Tutorial: Quick, but Good, ITV."** *E·ITV*, October 1983, pp. 61-64. A description of videotape production at Auraria Higher Education Center in Colorado using professors tutoring students in the professors' offices.

Danna, Sammy R. **"Millipore Serves a Scattered Sales Network with Videotape."** *E·ITV*, September 1983, pp. 86-89. A profile of a Massachusetts manufacturer using videotapes for communications with employees and customers.

Eschmann, Ron. **"Video at an Air Force Hospital."** *E·ITV*, September 1983, pp. 90-93. A look at professional/medical training provided by videotape at Keesler Air Force Base in Mississippi.

Lovece, Frank. **"Buyer's Guide: Video Cameras."** *Electronic Learning*, October 1983, pp. 94-100. A guide to setting up a video production unit.

Rhodes, Lewis A. **"When is a Talking Head NOT a Talking Head?—When You're Interested in What It Says."** *E·ITV*, October 1983, pp. 49-53. An explanation of Project BEST's use of videotape and learnings from their development of video modules.

Shea, Tom. **"Videotape Instruction Can Be a Substitute for Classroom Learning."** *InfoWorld*, October 10, 1983, pp. 20-23. A look at several companies that offer computer instruction on videotape.

"Should Home Taping Remain Free?" *Broadcasting*, October 31, 1983, pp. 58. A report on a debate in the Senate over imposing a manufacturing fee on home recorders and tapes.

Smith, Judson. **"Advice for Video Beginners: How to Avoid Baptism by Fire."** *Training*, November 1983, pp. 35-43, 46-47. A guide to needs analysis for developing a video training program.

Taylor, R.J. **"Self-Analysis of Teaching Style Using Television."** *Journal of Educational Television*, Vol. 9 (1983), 183-88. A description of a videotape program to introduce teaching strategies to training professionals.

High Tech Courses Offered by British Firms

The video revolution is now being harnessed to provide industry and management with cost-effective, specialist courses relevant to the latest advances in engineering, science, and management. With a grant from Britain's Department of Industry, Heriot-Watt University (Edinburgh) established a project called Video Course Services.

Video Course Services was set up by the university in 1982 jointly with the Engineering Industry Training Board making available to British industry high-technology video courses. An advisory board of representatives from industrial companies and other interested bodies, including a member from the Department of Industry, will advise the university on the video course material to be made available.

Under university license agreements with, for example, Massachusetts Institute of Technology's Center for Advanced Engineering Study and the Association for Media-Based Continuing Education for Engineers, Inc., in Atlanta, the advisory board can select from over 400 videotaped courses at the postgraduate level from 21 engineering universities in the United States.

The advisory board is also able to select from material produced in the United Kingdom, although very little material at this level has so far been produced in that country. One of the objectives of the project is to seek to correct this situation.

Worldwide, over 35,000 engineers annually take more than 1,200 postgraduate-level video courses at their place of work. A major advantage of the video course system is that the courses are rented or sold at a single price, no matter how many people take the course. The video course solution evolved in the U.S. to meet the needs of busy executives, professional engineers, scientists, and managers who wanted to advance their careers and increase their earning power, but whose job demands and family commitments precluded their taking time off for short courses on campus, even where such courses existed in their locality.

"The success of the video course solution is due to the fact that it is convenient, effective, and economical," comments K.D. Stephen, director of television at Heriot-Watt University, who administers Video Course Services. Stephen is passionate in his belief that Britain must make the leap forward in off-campus instruction at the professional and postgraduate level as the rate of technological innovation keeps increasing.

"Our perspective has been too parochial. We have persisted, even in sophisticated universities, in trying to solve the problems by traditional means, and past initiatives have been too local, too limited in scope, and too late," said Stephen. "In many fields we in the U.K. have one or two people in a university lecturing, tutoring, researching, and consulting, compared with 10 or 20 people operating in the same field in an American university. On this basis we cannot be expected to compete." He believes that the field of high technology is moving towards a university of the world, linked by video courses.

For further information and examples of available courses in computer science and engineering, electrical/electronic engineering, mechanical engineering, and engineering management, contact Kenneth D. Stephen, director of television, VCS, Television Centre, Heriot-Watt University, Edinburgh EH1 2HT.

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COMPUSCAN

Articles, books, programs, and projects involving the uses of computer technologies.

Computers

"Computers in the Library," by Jean Riley, *T.H.E. Journal*, November 1983, pp. 123-24.

Cumberland College in Williamsburg, Kentucky, uses 11 microcomputers in its Hagan Memorial Library for a variety of purposes. The results have been so encouraging that the institution plans to add 20 more.

Students, faculty, and library staff use the microcomputers. Students take advantage of programmed modules for class assignments and review, do research from computerized databases, and can even get printouts of such materials as the Bible. Tutorial diskettes can also be checked out.

Aside from educational uses, the college has found that arcade-type games offered to students on the microcomputers help relieve tension and often require students to think through solutions to various problems.

Faculty have enthusiastically accepted the computer technology. In several departments, computer-assisted testing, tutorials, and classroom enrichment are the norm.

Within the library itself, staff use the microcomputers for database searching, interlibrary loan, cataloging, and assorted bookkeeping purposes.

The instructional media staff of the library also teach students how to use the equipment and act as a resource for other institutions interested in establishing a microcomputer lab.

Baldridge, J. Victor and Kenneth C. Green. **"Microcomputers on Campus: Answers to Common Questions."** *AAHE Bulletin*, September 1983, pp. 12-14. An examination of several questions about microcomputer use on college campuses.

Barger, Robert Newton. **"Computer Literacy: Toward A Clearer Definition."** *T.H.E. Journal*, October 1983, pp. 108-12. A discussion of the imprecise definition of computer literacy and suggestions for elements that should be included in the definition.

Behrens, Steve. **"10 U.S. Stations to Offer TVO Computer Academy."** *Current*, October 25, 1983, p. 12. A report on the involvement of public television stations in a Canadian ITV course on computers.

Bobko, Douglas J. and John F. Hayes. **"Maintenance Training and Performance: A Computer-Based Management Information System."** *Journal of Computer-Based Instruction*, Vol. 10 (Autumn 1983), 76-79. An analysis of a U.S. Army system that monitors technical activities of maintenance personnel.

Brubeck, Dale and Ronald C. Comer **"CBI Research and Development Centers —the Ohio State University."** *Journal of Computer-Based Instruction*, Vol. 10 (Autumn 1983), 94-96. An overview of noteworthy efforts at Ohio State to study computer-based education.

Dallman, Brian et al. **"TRIADS: A Foundation for Military Computer-Based Instruction."** *Journal of Computer-Based Instruction*, Vol. 10 (Autumn 1983), 59-61. A description of a project to develop software and hardware for computer-based instruction in military training and other educational applications.

Fisher, Glenn. **"Where CAI is Effective: A Summary of the Research."** *Electronic Learning*, November/December 1983, pp. 82-84. A summary of research studies that support the finding that CAI is effective under certain conditions.

Fisher, Glenn. **"Where to Find Good Reviews of Educational Software."** *Electronic Learning*, October 1983, pp. 86-87. A list of organizations that offer reviews of educational software.

Fitzgerald, Delores. **"Small College Business Program Focuses on Computers in Decision Making."** *T.H.E. Journal*, October 1984, pp. 109-15. A profile of a program at St. Joseph College (Conn.) to help business and economics students prepare for computer technology in their chosen fields.

Frank, Ronald A. **"Evolution of a Local Area Network at Dartmouth College.** *Business Communications Review*, September/October 1983, pp. 10-13. A look at distributed access to computing resources at Dartmouth College.

Kobryn, Nancy. **"The 'Computerrevolution' in California."** *T.H.E. Journal*, October 1983, pp. 128-29. A review of the state of the art in computerized education in California.

McDonald, Barbara A. and Alice M. Crawford. **"Remote Site Training Using Microprocessors."** *Journal of Computer-Based Instruction*, Vol. 10 (Autumn 1983), 83-86. A description of a study to provide Navy personnel with combat training.

Montague, Willi[illegible]allace Wulfeck II, and John A. Ellis. **"Quality CBI Depends on Quality Instructional Design and Quality Implementation."** *Journal of Computer-Based Instruction*, Vol. 10 (Autumn 1983), 90-93. A discussion of studies concerning the design of computer-based instruction.

Morrison, John E. and Bob G. Witmer. **"A Comparative Evaluation of Computer-Based and Print-Based Job Performance Aids."** *Journal of Computer-Based Instruction*, Vol. 10 (Autumn 1983), 73-75. An analysis of a study to compare the performance of soldiers who use two kinds of job aids.

Nawrocki, Leon H. and Janet L. Winner. **"Video Games: Instructional Potential and Classification."** *Journal of Computer-Based Instruction*, Vol. 10 (Autumn 1983), 80-82. A review of research to evaluate the potential of computer video games as instructional media.

"Personal Computers Come to Clarkson College." *T.H.E. Journal*, October 1983, pp. 94-96. An overview of the introduction of computers to faculty and students at Clarkson College (New York).

Petrovsky, Mary and Helene Miale. **"The Home Computer: Problem Solver or Toy?"** *Franson's Business Report on Technology*, 3rd Quarter 1983, pp. 1, 3-4. A discussion of the home computer market and the development of useful consumer applications.

Shea, Tom. **"$30 Million Computer Education Act Signed by California Governor."** *InfoWorld*, October 24, 1983, pp. 8, 13. A report on a new law in California to support state coordinated efforts to oversee the use of computers in schools.

Strange, John H. **"Preparing for Today Tomorrow: Faculty Training for the New Technologies."** *AAHE Bulletin*, October 1983, pp. 10-14. A view of future developments in the use of computers in education and how higher education can prepare for these changes.

Warmuth, Richard A. and Mark R. Skinner. **"Getting West Virginia's Teachers Ready for the 'Micro Kids.'"** *T.H.E. Journal*, November 1983, pp. 100-104. A

profile of a series of computer literacy workshops for elementary and secondary teachers in West Virginia.

Zientara, Peggy. **"MIT Project Uses Micros and NMR to Aid Medical Diagnosis."** *InfoWorld*, October 10, 1983, p. 34. A report on a project to use computers for nuclear magnetic resonance imaging, instead of X-rays, to scan the interior of the body.

A Micro Handbook for Small Libraries and Media Centers, by Betty Costa and Marie Costa. Libraries Unlimited [P.O. Box 263, Littleton, CO 80160-0263]. 1983. 216 pp. $19.50.

A history of computers and their role in libraries. This volume is a guide to selecting and implementing a computer system in a media center. It also provides detailed coverage of computer software and its applications for automating circulation, cataloging, online database searching, and other functions.

Computer-Based Training: A Guide to Selection and Implementation, by Greg Kearsley. Addison-Wesley [Reading, MA 01867]. 1983. 204 pp. $29.95.

An introduction to major aspects of computer-based training, including current practice and terminology. This book is intended for military, industrial, and government training communities and includes case studies describing the development of a computer-based training projects.

Engineering Students Participate in Computer Network

The University of Michigan College of Engineering is establishing a computer-aided engineering network that will consist of 400 to 500 workstations for students. A unique arrangement of student "user fees" will support the acquisition and maintenance of the network.

All U-M undergraduate and graduate students enrolled in the college's degree-granting programs will pay a computer user fee of $100 per term, to be incorporated into their total tuition charge. In return, the college will provide each student with unlimited use of the computing facilities without additional charge. This program differs considerably from the approach taken at other universities, where students have been required to purchase personal computers costing between $1,000 and $2,000.

"Instead of investing for a personal computer, the college will ask its students to pay the computer user fee each term to support a vastly more sophisticated computing environment," said James Duderstadt, U-M engineering dean, and Daniel Atkins, associate dean.

This new environment includes more powerful personal computers, costing in the range of $4,000 to $5,000, and capable of supporting sophisticated languages and operating systems. "This is the level of equipment that we expect our students to use when they enter industry.

"We believe a more effective way to approach the challenge of providing personal computing resources is for the educational institution itself to assume the primary responsibility of acquiring, installing, maintaining, and upgrading the computer-communications technology."

Featuring workstations on the U-M's central and north campuses, the Computer-Aided Engineering Network will provide many support activities, including word processing, computer graphics, data base management, and communications with larger data systems and computing networks.

The college's 400 to 500 workstations will include both 16-bit personal computers and 32-bit engineering workstations. These facilities will be located in a number of classroom laboratories across the campus, each containing 30 to 50 workstations.

The $100 per term user fee for full-time engineering students began in fall 1983. This charge will be adjusted each academic year, consistent with the services provided by the network.

For further details contact James Duderstadt, dean of engineering, University of Michigan, Ann Arbor, MI 48109.

Hewlett-Packard Donates Computers to Oregon Business School

Business students at the University of Oregon now work at microcomputers with a wide range of applications, thanks to a gift from the Hewlett-Packard Co. The firm, which has facilities in Oregon, donated to the UO College of Business Administration seven HP-86A personal computers with seven printers, two plotters and software for computing, word processing, filing, and graphics, according to James Reinmuth, business dean.

Oregon is one of seven universities to receive HP personal computers this year. The others are Arizona, Brigham Young, Carnegie-Mellon, Northwestern, Purdue, Washington, and the Wharton School of Business at Pennsylvania. According to Hewlett-Packard officials, the firm is supporting the UO college "because of the quality and scope of the current and planned curriculum offerings and the contributions the college is making to the Northwest business community as demonstrated by the calibre of graduates HP has employed. We hope to be able to continue supporting the college in the years ahead."

The college's long-term project to remodel and re-equip Gilbert Hall with the assistance of Oregon businesses is significantly enhanced by the $44,226 gift. The seven computers will be installed in the Bohemia Computing Laboratory, one of the remodeled rooms in Gilbert Hall. The lab currently has terminals that give students access to the university's mainframe computers.

"American businesses are facing an increasing use of computer applications, requiring business students to master the use of computers," says Richard Steers, associate dean for academic affairs, adding that computer studies are now as much a part of the core curriculum in the business school as accounting, marketing, and finance. "As more and more companies begin to use microcomputers, young managers are going to have to know how to use the microcomputer software."

The Hewlett-Packard gift not only represents the start of a relationship between an important Oregon business and the university, it also provides students with a unique opportunity for first-hand experience with the latest technology in computer applications for business.

For further details, contact Richard Steers, associate dean for academic affairs, University of Oregon, Eugene, OR 97403-1204.

Interactive Video

"Interactive Videodisc Learning Systems," by Richard L. Currier, *High Technology*, November 1983, pp. 51-55, 58-59.

Interactive videodisc has great potential in educational settings for several reasons, suggests this author:

- it simulates reality and offers an alternative to "hands-on" experience;
- disc players can be installed almost anywhere;
- discs can be changed as necessary and are inexpensive to reproduce;

• courses can be taught even when local teachers are unavailable.

A significant feature of this technology is the students' ability to respond. They can move at their own pace, trying out various approaches to problem-solving.

As the applications become more evident, videodisc projects have multiplied. One group has become prominent—the Nebraska Videodisc Design/Production Group, an affiliate of the Nebraska Educational Television network at the University of Nebraska. It has been involved with more than 500 projects, as well as symposia and hands-on training workshops.

Another organization is National Education Corp. the largest private vocational training institution in the U.S., which is working to develop the Action Code system for interactive learning.

Interactive videodiscs can serve as an "electronic tutor" to students in any number of areas, from cardiopulmonary resuscitation to chemistry lab techniques. It is especially useful in simulating emergencies.

Technical advantages of IVD—besides simulation—include motion decomposition (freeze-frames), movie maps, disassembly, and masking (which allows students to use as many "clues" as it takes to find the correct answer).

Development costs for a single interactive videodisc typically run between $50,000 and $100,000. These costs can be reduced with editing and authoring tools now being produced, but the technology is still relatively expensive for educational purposes.

"Student Acceptance of Videodisk-Based Programs for Paramedical Training," by D. Thompson Manning, Paul Balson, Donald G. Ebner, and Franklin R. Brooks, *T.H.E. Journal*, November 1983, pp. 105-108.

Army instructors at Ft. Sam Houston's Academy of Health Sciences have discovered the usefulness of videodisc in teaching paramedical and basic nursing skills. Training personnel how to give injections and similar skills is time-consuming because of student stress. The videodisc allows students to practice without a teacher and then be retested as often as necessary.

The Educational Technology Work Group at the academy worked on an interactive videodisc suitable for the paramedical training needs. Existing IVD programs were not appropriate, partly because of the newness of the medium.

During the development process, two other factors were identified as being highly significant: production cost and student acceptance. Access to Army production facilities made cost less of an issue in this case, but student acceptance was important. Because preparation for and administration of intramuscular injections involved skills that had the highest student failure rate, this was selected as the subject for the first interactive videodisc. Nine distinct portions were created—from showing the parts of a syringe to the actual injection. Any segment can be repeated until the student masters it. A dual soundtrack allows for bilingual instruction.

The developers have found that not only do students respond favorably to IVD, but a traditional three-hour class can now be taught in two hours.

Call, Diane. **"Basic Principles for Doing Interactive Discs."** *E·ITV*, October 1983, pp. 98, 103-104. A discussion of the skills and activities involved in the design, development, and production of an interactive video disc program.

MACROSCAN

Articles, books, resource documents, programs, and projects involving the uses of computer technologies.

Griffin, William H. **"Can Educational Technology Have Any Significant Impact on Education?"** *T.H.E. Journal*, November 1983, pp. 96-99. A commentary on the role of information technologies in promoting learning and how they will reshape the educational system.

Miller, Harry G. **"Perspective on Emerging Technical Careers and Higher Education."** *T.H.E. Journal*, October 1983, pp. 123-27. A discussion of the relationship between higher education and career preparation as technological advances require new technical training.

Seaga, Edward. **"Telecommunications in the Caribbean."** *Satellite Communications*, October 1983, pp. 50, 52. An excerpt from a speech by the Prime Minister of Jamaica on the applications of telecommunications technologies in Third World countries and particularly Jamaica.

Colleges Enter the Information Society, Current Issues in Higher Education, by Russell Edgerton et al. Available from the American Association for Higher Education [One Dupont Circle, Suite 600, Washington, DC 20036]. 1983. 38 pp. $4 prepaid.

A collection of papers presented at AAHE's National Conference that focus on the implications of information technologies for colleges.

Resource Catalog/1983. The Communications Consortium, Inc. Massachusetts Institute of Technology [Cambridge, MA 02139]. 1983. 129 pp.

A listing of the communications resources and production facilities available from members of the consortium. This booklet describes a variety of educational and cultural organizations in Massachusetts that are involved in using technology to reach new learners and audiences.

International Committee Formed for Tele-Education

A workshop held in Washington, D.C. in March 1983 assessed the present status and explored the future utilization of technology to produce, distribute, and exchange educational programs and ideas internationally and intranationally. The workshop participants were educators, technologists, and business people who represented diverse international educational broadcast, nonprofit, and commercial enterprises. The group spent three days discussing past efforts, successes, failures, emerging issues, and prevailing needs.

As a result of that workshop, the Committee for International Tele-Education was formed, committed to the idea that the educational use of existing and emerging communications technologies should be explored and promoted. The immediate goals of the committee are to:

- publish the workshop papers;
- compile a directory of organizations

involved in or related to tele-education;
- conduct a feasibility study;
- begin exchanging information among interested individuals.

The workshop papers will be available from Westview Press in spring of 1984 in a volume entitled *Toward International Tele-Education*. Proposals have been developed for publishing the directory and conducting a feasibility study and funding is being sought. A quarterly newsletter is available which features articles on interesting projects, comments from the private sector, updates on actions and activities on Capitol Hill, and the progress of the committee.

The committee is seeking donations of $25 which, in the event of incorporation, will be applied to first-year membership dues. This $25 contribution entitles contributors to:
- copies of the CITE newsletter;
- discounts on *Toward International Tele-Education* as well as other related books and publications;
- regular updates on the committee's activities.

Questions or comments about the committee's activities should be addressed to Lynn Fontana, chairperson, Committee for International Tele-Education, National Public Radio, 2025 M St. NW, Washington, DC 20036.

Directory Now Available At 40% Discount

Meeting Learners' Needs Through Telecommunications: A Directory and Guide to Programs, by Raymond J. Lewis, is now available to *TELESCAN* readers at the discounted price of $25.

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Evolving Computer Networks in Higher Education

continued from page 1

"business" of the institution. Such academic networks stand in sharp contrast to the high transaction rates and tight control structures of many commercial networks designed to support an organization's needs for reservation, order entry, and/or electronic fund transfer facilities. . . .

Scholars tend to identify with their own disciplines rather than with their department or college/university. Often only a small group of individuals share common research interests within a department, and these people want to communicate with peers located throughout the country, or the world. For example, the natural affinity of widely dispersed researchers in the same discipline leads to efforts to establish networks such as COGNET, a proposed distributed computer network for the field of cognitive science. . . .

Four of the most important general reasons for establishing discipline-based computer networks [are]: *accessibility* to a service facility, *communications*, access to *specialized resources*, and *control* by the discipline.

There is a strong tradition of free and open interchange of information within the academic community. The information explosion and the breakdown of traditional channels for publishing and distributing timely research information have created what some call "invisible colleges." Informal working papers, preprints, drafts, and even raw data flow among members of invisible colleges. Since much of this information is often computer-based, networks are natural communications channels. Computer networks offer the potential for greater participation in, and easier entry to, "invisible colleges."

A significant amount of academic activity goes on outside of the traditional workday and away from a traditional office setting. Computer networks can support this kind of workstyle very well. It is often easier to contact an individual through a computer network than by telephone because participants do not have to be available simultaneously to use computer-based communication systems.

Many educators are interested in developing new technologies to reach learners who are not necessarily located on campus. The growth of the home computer industry and the availability of networks create new opportunities, which are just beginning to be explored in the United States, for dealing with distant learners.

The widespread and growing availability of microcomputers, communicating word-processors, departmental minicomputers, local campus networks, and national networking organizations (both commercial and nonprofit) are combining to make networking more economical, and much more convenient, than it was a few years ago. When asked what are the three most important factors to the growth of computer networking, a network manager recently replied "convenience, convenience, and convenience."

Computer-based networks, if well designed, are able to support the many needs and traditions of academia. Several different flavors of networks currently exist, and the number is growing. There are no political forces to inhibit or to consolidate this growth, and there are no national governing bodies that could impose an unwanted standardization. Of course, if one technology emerged that was clearly superior to, and more economical than all others, it would be widely adopted for new applications. However, successful older networks would continue to exist for a long time. . . .

Typical Academic Applications

Many important applications belong to the broad class of *resource sharing* uses. To replicate unique hardware, software, and data resources on every campus is prohibitively expensive. Consider, for example, the costs of operating the largest available supercomputers on many different campuses to satisfy the computational requirements of relatively few researchers. It is more economical to satisfy most common computing needs locally, and to access remote resources for important, but not heavily used applications. The same argument can be made for sharing unique software and data resources.

Several successful networking applications in higher education have been justified using resource sharing arguments, but the actual number of such cases is fewer than was predicted several years ago. . . . The rapidly declining costs of hardware and the almost universal desire for local, even individual, control of information processing facilities are two of the strongest pressures for localized

computing capabilities. The *relative* lack of importance of academic resource sharing contrasts with many networks in the private sector where resource sharing is of paramount importance—for example the strong motivation to share airline reservation information among many companies and passengers.

If resource sharing, although vital to some applications, is not the primary driving force in much of academic networking, what is? *Communication* among people is the obvious answer. Most academics must communicate with others to accomplish their goals. Since they are often separated from peers by large distances, and since the nature of their work is often collaborative and asynchronous, faculty, students, and administrators who have tried computer communication networks have, by and large, found them to be useful. Traditional communication channels (annual meetings, mail, telephone, etc.) do not have the needed capacity, or more importantly, the appropriate response time.

Many items are routinely sent electronically by people with access to computer networks—short mail-type messages, reports, drafts of papers, data, programs, preliminary ideas, requests for comments and help, etc. Computer-based communication in networks has always been valuable, but often its importance was not freely admitted because it was not the primary reason for a network.... Once many independent system components are in place, communication applications among previously disjointed elements are often important enough to justify networking.

The widespread use of computer networks for communicating is causing new forms of computer-based communication services to be developed. Electronic bulletin boards and sophisticated conferencing systems are two examples popular in higher education....

Network Control and Funding

The ultimate evolution of approaches to funding of academic networks is not yet clear. Some networks are supported by granting agencies, others by participation fees covering various levels of use, others by incremental charges for each use, and still others by a combination of these methods.

One might think that in a network of peer institutions, one node or one institution would dominate the amount of traffic generated and consequently create the need to balance equitably the charges for network use. In the BITNET example, the fundamental assumption is that such a node does not and will not exist. There are no charges for individual messages. Organizations pay for a communications channel to one other node in the network (the charge depends on the length of this connection), and they do not pay any marginal charges based on usage of the network.

A balanced usage pattern is not an unreasonable assumption for some types of networks—particularly store-and-forward message systems with a well designed topology.... The authors believe that this balance of usage is one of the reasons for BITNET's success.

Many networks are based on different pricing assumptions. For example, EDUNET performs a rebilling function for its participants. A significant amount of EDUNET's traffic is for remote use of computer-based applications that are much more costly than message forwarding. A few EDUNET hosts account for a large portion of the network activity. In this case a "balance of trade" does not exist, and hosts charge for usage on a monthly basis.

Control of what traffic is allowed on the network might seem to be the natural province of the university administration, subject to the usual practices of academic freedom. However, for a heavily used network with peer nodes in multiple countries, it is beyond the state of the art to exercise any substantial direct control. One can issue guidelines, have awareness meetings, etc., but direct monitoring is simply not feasible. To the authors it is not clear whether technical impossibility of control is sufficient legal protection for the academic administration.

Incentives for the Growth of Networks

The authors believe that computing systems are cost justified on other than networking requirements, and that once a computer is justified, networking is a natural, straightforward, and relatively inexpensive next step that is often taken. Therefore an obvious incentive to more networking is to increase the availability of computers within the higher education community.

A good way to increase the availability of computing capabilities in higher education is to increase tax benefits for the student or faculty member who buys a system or for the individual or corporation donating a system to a university. Such tax laws already exist, but their liberalization could significantly increase the penetration of university networks and the concomitant benefits. At the same time a reduction in the cost of data transmission would be beneficial. Perhaps educational discounts for data communication facilities and tax benefits for the donation of bandwidth should become part of our tax laws.

These initiatives could have the benefit of increasing networking in less well endowed institutions. Most of the major institutions in the United States have several computers and a wide variety of networking facilities. In fact, some institutions have stated their intent to make a microcomputer a condition for entrance. At a cost (not necessarily the price) of approximately $60,000 for four years of education, a computer for another $5,000 is not that significant. Consequently, liberalization of tax benefits would have its most significant impact on the less well-endowed institutions. This would clearly benefit the United States in the same sense that the Land Grant Act and the GI Bill have encouraged a broad and deep penetration of educational opportunities.

Another approach is for state education departments to decide to develop well planned and integrated regional facilities....

Future Trends in Academic Networking

With a few exceptions, there are no heavily used academic computer links from the United States to other countries. There are several interesting networking activities in the European higher education community. Are there policies in place in other countries that limit access? Is it the expense of telecommunications links, or is it just that the evolution of American academic networking has not reached the stage where international links are of great importance? It seems obvious that academic networking connections between the U.S. and other countries will grow in importance as the technology evolves.

Since there are no political forces to limit the number of different academic networks, the authors believe they will continue to grow in size and to proliferate in variety. This growth will be compounded by the constantly decreasing cost of computer hardware. This proliferation has obvious associated costs and disadvantages. However, the newness of this field and the dynamic growth of new ideas are such that it is premature to try

to restrict the growth with artificial means. Gateways among networks offer the only reasonable technical and organizational approach to the problems inherent in this proliferation.

Periodicals

Abstracts and periodicals appearing in this issue of *TELESCAN* cover the period between September 15, 1983, and November 15, 1983. Below is a list of periodicals reviewed for this issue. A complete list of periodicals is available to subscribers on request.

Bank Marketing
Charles Bartling

Franson's Business Report on Technology
Franson & Associates

Contributors

Contributors to this issue of TELESCAN are listed below. The efforts of these individuals have been critical to our monitoring activities. ***We urge those of you who wish to become part of this important information network to submit to TELESCAN items of potential interest to our broadly based audience.***

Steve Behrens
Current

Peter Bowers
TVOntario

Lynn Fontana
National Public Radio

Virginia Ostendorf
Kellogg Communications Corporation

K.D. Stephen
Heriot-Watt University

Marc Tucker
Project on Information Technology and Education

Center for Learning and Telecommunications
One Dupont Circle, Suite 600
Washington, D.C. 20036
202/293-6440

Director: **Marilyn Kressel**
Communications Coordinator: **Karen Sibert**
The Center is supported by the Carnegie Corporation of New York.

AAHE
AMERICAN ASSOCIATION
FOR HIGHER EDUCATION
ONE DUPONT CIRCLE, SUITE 600
WASHINGTON, D.C. 20036

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TELESCAN

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The Digest of the Center for Learning and Telecommunications VOLUME 3 ISSUE 4

Instructional Videodisc

Greg Kearsley, Courseware Inc. Excerpted from an article appearing in the Journal of the American Society for Information Science, November 1983.

Videodisc represents a unique and powerful tool for instruction. First, it provides a high-density multimedia storage encompassing printed text, photographs, audio, video, and animation. Secondly, it provides an interactive medium highly suitable for individualized instruction. Thirdly, because videodisc can store both analog and digital information, it serves as a bridge between existing audiovisual media and emerging electronic media (i.e., computers and telecommunications).

Each of these three factors provides a context for instructional applications of videodisc. Videodisc can be used to package and distribute a collection of multimedia materials in a compact and economic format. For example, the U.S. Army has investigated the use of videodisc for "integrated training packages" to combine materials which currently exist in print, slide/tape, and film/video formats. In this mode, videodisc simply replaces other media and provides random access capabilities. It is more convenient for the student or instructor to use than a collection of different media and equipment.

As an interactive media, videodisc offers many possibilities for individualized instruction. Because of its tremendous still frame capacity combined with sophisticated branching and indexing, a huge number of possible paths through the same content is possible. Thus, each user of videodisc can have a different instructional experience based upon his or her particular interests, aptitudes, or needs. For example, medical education videodiscs have been made which provide instruction for both medical professionals and patients using the same content. . . .

In terms of making the transition from print and film materials to electronic media, videodisc plays an important role. One critical area concerns the design and human factors requirements associated with the display of text and graphics on display screens instead of paper. Another dimension involves finding the best way to allow users to interact with videodisc materials (e.g., via keyboard and keypads, touch screens, joysticks, speech input, menus, common languages, etc.). Yet another set of questions has to do with methods for translating current information into digital form to permit more compact storage, more precise retrieval, high quality displays, and faster transmission. Videodisc serves

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Videodisc—Should Broadcasters Be Interested?

Ralph France, executive producer, Department of Higher Education, Maryland Public Television

At noon, February 9, 1983, Maryland Public Television became the first television facility to originate broadcast of a television series from videodisc. The purpose of that broadcast was to explore the feasibility of using videodisc as a distribution medium for the video portion of courses offered by the International University Consortium. [For additional information on this study see article on page 7.] The results of the study have not only supported the practicality of videodisc as a broadcastable, cost-effective distribution medium, but have set the stage for much more.

In time, many science, drama "how to," and other types of programs may well be distributed to broadcasters via videodisc instead of satellite. This will begin to occur as players become more common in the home, the classroom, and in libraries. Disc technology, with its rapid access capability, is ideally suited to turning these programs into reference materials.

This is not to imply that videodisc will ever replace satellites; it won't. But broadcasters may well find advantages in distributing certain programming on

continued on page 2

In this issue . . .

PBS Adult Learning Service reports on second year, coming programs... page 4

Annenberg/CPB projects test new technology in higher education ..... page 5

International consortium releases findings of videodisc study ..... page 7

Videodisc developers receive awards..... page 7

Computer program aids students in selecting a college..... page 11

SCAN

Dear Subscriber:

The videodisc, a technology still in its infancy, has not yet reached its full potential use. The competitive video-cassette recorder has edged videodiscs out of the consumer market, recently causing RCA to discontinue their line of players. Even though RCA's SelectaVision is dead, videodisc technology will continue to grow. The laser-based videodisc's unique ability to store both analog and digital information has generated much interest and hopes for its future in other markets.

This issue of *TELESCAN* explores the potential of videodisc use in instructional settings. Our reprint from the *Journal of the American Society for Information Science* explains the technology: its advantages, disadvantages, and discusses some interesting projects now developing instructional programs on videodiscs. Greg Kearsley, the article's author, praises the videodisc's ability to store multimedia information and provide an interactive medium so highly suitable for instruction. These factors together with its ability to bridge existing audiovisual media and computers/telecommunications has made videodiscs very attractive to educators.

Ralph France, executive producer for the Department of Higher Education, Maryland Public Television, contributes our feature article on videodisc use in broadcasting. Maryland Public Television is currently using videodiscs to originate one of its TV series, a first in broadcast TV. France describes his experience with this application and the advantages he found with videodiscs over satellite distribution of programming.

TELESCAN continues its coverage of videodiscs in the bibliography section. On pages 6-7, you will find articles covering a 1983 Videodisc Feasibility Study conducted by the International University Consortium for Telecommunications in Learning. This study has evaluated videodisc technology as a cost-effective alternative distribution system for IUC courses. Another listing discusses disc technology aiding the mentally handicapped through interactive programs that help assess, diagnose, prescribe, and instruct the handicapped.

The Center for Learning and Telecommunications will be investigating ways to bring you more information on emerging technologies and will be looking to change *TELESCAN* over the next year to accomplish this goal. You have probably already received in the mail a questionnaire asking for your input on *TELESCAN*'s content and format. I encourage you to fill out the questionnaire so that *TELESCAN* can change to meet your growing needs for information.

I would like to take the remaining space to introduce myself. I am the new Communications Manager for the Center of Learning and Telecommunications. While I also come from a background in commercial and public broadcasting, most recently I have worked in cable—the last three years with the National Federation of Local Cable Programmers reporting the latest trends in local cable programming through its publications, the *Community Television Review* and the *NFLCP Newsletter*. I look forward to working with Marilyn to bring you *TELESCAN* and, we hope, other publications covering educational uses of technology.

Good Reading,

Joan Gudgel

Joan Gudgel
Communications Manager
Center for Learning and
Telecommunications

Periodicals

The periodicals cited in this issue of *TELESCAN* cover the period from November 16, 1983 to January 15, 1984. A list of the periodicals regularly reviewed for *TELESCAN* is available to subscribers on request. Below are listed those periodicals reviewed especially for this issue of *TELESCAN*.

Information Resource Management
Ericsson Information Systems

Link-Up
On-Line Communications, Inc.

New York Times

Should Broadcasters Be Interested in Videodisc?

continued from page 1

videodisc. This will surely not happen overnight, and will never evolve without someone leading the way. That is why Maryland Interactive Technologies—a cooperative effort of Maryland Public Television and Maryland Instructional Television—will move ahead to develop its broadcast application of videodisc.

A specialized laser optical videodisc will be used to further evaluate practical applications for broadcast and production. It will contain a wide variety of generic program materials that have an extended life span. The disc will be designed for Level I and Level II (player programmable) use. Level III, computer interfacing, will also be explored. Such items as engineering test signals, sign-on and sign-off programming, break slides, animated logos, program opens, super slides, EBS, funding and PBS slides, membership, "filler" materials etc., will be included. The ultimate goal, through experimentation, will be a design requiring as little disc space as possible.

For example, as broadcasters know all too well, satellite and microwave feeds are sometimes interrupted. A static "PLEASE STAND-BY" slide can make even the shortest interruption interminable for the average viewer. A special segment will, therefore, be placed on the disc to serve two functions. By placing selected archival scenic slides on the disc, they will be used not only as backgrounds for station break ID supers but provide interesting "filler" material for those unexpected interruptions. One minute of space on the disc consists of 1800 frames or slides. When played back in slow motion—one frame per second or longer—that one minute could last for 30, 60, 90 minutes or more, providing a wide variety of "filler" material using minimal real estate on the disc.

This disc in turn will reduce costs for future users. The average facility may require only five to ten minutes of station specific real estate on a disc. This would allow three to six broadcasters to share one side thus reducing individual costs proportionately.

Since the videodisc industry has not specifically addressed broadcast applications, Maryland Interactive Technologies will experiment with a variety of disc hardware and various remote control configurations. Initially one player will be located at master control and a second will be dedicated to production. Remote controls will be located in each of the three studio control rooms. Because of the rapid access capabilities of the disc

players, each studio will be able to "roll in" production materials from the disc. This will free up film chains and videotape machines as well as personnel time required to set up this equipment, thus expanding production capabilities. Additional players will be located at three remote transmitter sites. These will be used primarily to replace slide chains.

During the initial broadcast experiments in 1983 the Pioneer PR8210 was used. The video signal was sent directly to the transmitter via a processing amplifier. No time base corrector (TBC) was used. The resulting broadcast signal was rated superior to ¾-inch broadcast equipment using a TBC. The dramatic point to be made here is one of cost. The disc player retailed for under $1,000 while a broadcast-quality ¾-inch cassette machine with a TBC would be $20,000 or more. However, broadcast/production applications require disc equipment with external sync inputs. Fortunately, such disc equipment will still be relatively inexpensive. If expectations prove out, the savings on maintenance costs alone will pay for the costs of the players.

In order to assist others in the design and implementation of videodisc for broadcast/production applications, copies of this disc may be made available. However, interest in purchase should be expressed as soon as possible by writing to: Ralph France, Maryland Interactive Technologies, c/o Maryland Public Television, 11767 Bonita Avenue, Owings Mills, MD 21117.

Information in each section of TELESCAN is categorized using the following symbols:

Articles

Books

Washington-based activities

Programs and projects

AUDIOSCAN

Articles, books, programs, and projects involving the uses of audio technologies.

Radio

Baldwin, Thomas F. **"The U.S. Boom in Cable Radio."** *Cable Communications*, November 1983, p. 88.

An overview of the expanding role of audio networks.

"Maryland Signs as Early Taub Client." *Current*, November 22, 1983, pp. 1, 5.

An update on downloading, with emphasis on the Maryland Department of Education's contract with the National Information Utilities Corporation for a pilot data transmission project using local FM stations.

Teleconferencing

"How Will Teleconferencing Fare Under New AT&T?" *Telecoms*, November/December 1983, pp. 1, 3.

An examination of who will sell teleconferencing equipment, meet users' networking needs, market products, perform research and development, and direct overseas sales under the provisions of the AT&T breakup.

"Teleconferencing After Divestiture: Holding Companies Cautious, Eager." *Telecoms*, January 1984, pp. 1-2.

An informal assessment by corporate executives of the implications of the AT&T breakup.

Audioconferencing Expanded by EPA

The Environmental Protection Agency has installed a 48-port Westell audio system in order to conduct up to 100 teleconferences per month.

The new equipment will allow the agency to link 25 field locations and related groups and offices. It is more flexible and cost effective than the 16-port bridge previously used.

For more information contact Dwight F. Rodgers, telecommunications manager, EPA, 401 M Street SW, Washington, DC 20460; 202/382-2075.

VIDEOSCAN

Articles, books, programs, and projects involving the uses of video technologies.

Broadcast Television

Behrens, Steve. **"ITFS Becoming Something Else."** *Current*, December 7, 1983, pp. 1, 5.

A report on ITFS channels being reallocated for commercial use and concern for the future of ITFS.

"CPB Study Looks at Effect of Cable on Public TV." *Broadcasting*, December 19, 1983, p. 83.

A report of a commissioned study suggesting that cable homes "are more likely to sample public television than are noncable homes."

Danoff, Leslie. **"LPTV Thrives in Alaska."** *LPTV Currents*, November/December 1983, pp. 1, 12, 14.

A discussion of the use of LPTV—particularly the LEARN ALASKA network—by isolated villages in Alaska.

"FCC OK's PBS Plan for ITFD Network," *Broadcasting*, January 16, 1984, pp. 141-42.

A status report on the PBS application for its National Narrowcast Service.

Green, Alan. **"Public Television: Hold the Pickles, Hold the Lettuce."** *Videography*, December 1983, pp. 89-93.

An argument against commercials on public television, including the recommendation of the Temporary Commission on Alternative Financing for Public Telecommunications.

Kompas, John. **"The Low Power Business Plan."** *LPTV Currents*, November/De-

cember 1983, pp. 6, 8, 12, 14.

Recommendations for effective management of an LPTV business, considering needs of the viewing audience and merchant advertisers.

Leddy, Craig. **"Pay TV Courting School Channels."** *Electronic Media*, November 24, 1983, pp. 3, 13.

News of the "mushrooming marriage" of educational TV stations and subscription TV that provides variety of programming and income to school-run stations.

"Public Television and the New Educational Technologies." *ETV Newsletter*, December 26, 1983 (special supplement).

A report on the response of WNET-TV/Channel 13 to the questions surrounding educational applications of emerging technologies.

Ross, Jeannette. **"Channel 13—More Than a PTV Station."** *E·ITV*, January 1984, pp. 60, 62.

A review of WNET-TV/Channel 13's several new ventures: Technology Education Center, Learning Laboratory, Curriculum Technology Service, and Academy on Computers.

"Technology," *Broadcasting*, January 2, 1984, pp. 66-72.

An overview of the numerous broadcast technologies and speculation about the future.

PBS Adult Learning Service: The Second Year And Beyond

The PBS Adult Learning Service and local partnerships of colleges and public television stations have made great progress toward harnessing the power of television for postsecondary education, according to the Service's recently released second year report.

Several of the key barometers of success rose significantly: Student enrollments in PBS-distributed television courses climbed to more than 75,000, a gain of 36% over 1981-82; the partnerships of colleges and public television stations offered more courses than ever, with a growth of 37% over the previous year; and 95 colleges and 14 public television stations joined the Service for the first time.

Among the participating institutions, most are under public control (88%); 56% are two-year colleges, while 44% are four-year institutions. Forty-two percent of the colleges have total enrollments of between 2,500 and 10,000; 32% have fewer than 2,500 students; and 26% have more than 10,000 students. In spring 1982 the number of students per course offering increased to 37.4.

The 1983-84 academic year promises to be even more successful. In fall alone, almost 100 colleges joined the Adult Learning Service for the first time. To date, over 750 colleges and universities and nearly 250 public television stations have participated in the Service.

The fall 1983 premiere of the prime time television course "Vietnam: A Television History" set a new record for college licensing and attracted impressive enrollments in many communities.

Other new courses are forthcoming. "The New Literacy: An Introduction to Computers," the first television course from the Annenberg/CPB Project, will premiere on PBS in winter 1984.

The Adult Learning Schedule will feature in fall 1984 a major new documentary/television course, "Heritage: Civilization and the Jews." Hosted by Abba Eban, "Heritage" is an introductory-level survey of Jewish history, thought, and culture against the backdrop of the civilization in which Jews have lived.

Other fall 1984 college course options include "The New Literacy," "Business of Management," "Teaching Writing: A Process Approach," "The American Story: Beginnings to 1877," "Focus on Society," and "Understanding Human Behavior." Colleges and stations may choose to license any of the 21 courses in the PBS Adult Learning Service portfolio of educational programming.

Additional information can be obtained from the PBS Adult Learning Service, 475 L'Enfant Plaza SW, Washington, DC 20024, 202/488-5360.

Cable Television

Bremner, Brian. **"Looking to the Future."** *CableVision*, January 9, 1984, pp. 38-50.

An examination of the Canadian cable industry, which is "overpenetrated and heavily regulated."

"Canadian Copyright Problems Focus of Hill Hearing." *Broadcasting*, November 21, 1983, pp. 54, 56-57.

An assessment of a cable copyright controversy: Canadian holders receive royalties for U.S. use, but U.S. holders get no fees from Canada.

Christopher, Maurine. **"Europeans Advised to Study Cable in U.S. to Avoid Pitfalls."** *Electronic Media*, November 24, 1983, p. 5.

A report of the cable situation in Britain and Europe, with a warning about the costs and competition.

Diamond, Sara. **"Vancouver Cable 10: The Community Access Model."** *Video Guide*, Winter 1983, p. 7.

A description of the development of one of Vancouver Cable Ten's Neighborhood Television offices, Vancouver East, which provides access to vastly different groups.

Dumoff, Nancy. **"Hospitals Use an Institutional Network."** *Community Television Review*, Fall 1983, pp. 20-21.

A report on a cable network used by Kansas City Area Hospital Association.

Easton, Ken. **"Bits and Bytes."** *Cable Communications*, November 1983, pp. 5-7.

An examination of digital transmission and implications for cable TV.

Fields, Howard. **"Cable's First Amendment Stance Question for 1984."** *Cable Age*, December 5, 1983, pp. 10, 12, 14, 16.

An examination of major first amendment issues facing cable—obscenity, public access, and equal time.

Fox, Francis. **"A Vitally Important Role for Cable."** *Cable Communications*, December 1983, pp. 10-11

A report by the Canadian Minister of Communications on broadcasting strategy, cable's role, and cable services in Canada.

Gelman, Morrie. **"Cable Outlook: Two Conferences to Focus on Future, Rival Technologies."** *Electronic Media*, December 8, 1983, pp. 1, 27.

A note on topics covered by the National Cable Television Association's Cable Programming Conference and the Westar Cable Show and Convention.

Gelman, Morrie. **"Electronic Services Plug into Shoppers' Demands."** *Electronic Media*, December 8, 1983, pp. 10, 12.

A report of several experiments in home shopping services and their potential effect on conventional retailing.

Jones, Dan. **"Boston: Studying the I-NET."** *Community Television Review*, Fall 1983, pp. 18-19.

A report on the progress of a city data network, including a trunk system in City Hall and drawbridge control.

Livingston, Victor. **"Taking Care of Business at Tribune."** *CableVision*, December 5, 1983, pp. 72-74.

A discussion by representatives of Tribune Cable Communications, Inc. on topics such as carriage fees, basic tiering, public access, and competition from al-

ternative technologies.

Polanski, E. J. **"Community Programming —Where To From Here?"** *Cable Communications*, December 1983, p. 40.

A prediction of likely developments in "local" programming.

Previty, Joseph H. **"Cable Television: An Aid to Education."** *T.H.E. Journal*, January 1984, pp. 136-37.

A brief report on uses of cable TV for adult learning, expanded curricular offerings for elementary-secondary education, and videotext.

Rice, Jean. **"Institutional Networks: Understanding the Basics."** *Community Television Review*, Fall 1983., pp. 12-13.

Questions and answers about networks: definition, technology, services, finances, and growth.

Rosenkrantz, Patrick. **"Local Origination: Access Accommodation."** *Video Systems*, December 1983, pp. 28-38.

A report of a Portland, Oregon, video experiment that offers free training and use of facilities to the public at Portland Cable Access.

Rothbart, Gary. **"Computer Software via Cable: Untapped Market."** *CableAge*, December 19, 1983, pp. 6-8.

A discussion of technological, regulatory, and economic issues of computer teledistribution.

Russell, Sally. **"Dressing a System for Success."** *CableVision*, December 5, 1983, pp. 62-69.

Suggestions on how to rebuild and/or upgrade a cable system to meet the demands of subscribers and competition in the future.

Shaffer, Drew and Karen Kalergis. **"What's the 'Net' Value of I-NETS?"** *Community Television Review*, Fall 1983, pp. 14-16.

An assessment of successful I-NETS—separate cables dedicated to institutional or business uses.

Directory of Cable Education and Training Programs, National Cable Television Association [1724 Massachusetts Avenue NW, Washington, DC 20036]. 1983. 75 pp. $5.

Gives approximately 65 training centers, colleges, and universities with training programs in cable technology and management.

Videotext/Teletext

Canape, Charlene. **"Teletext Faces Slow Start-up."** *Electronic Media*, November 24, 1983, p. 17.

A report on a shortage of decoder boxes—which is a key problem in marketing broadcast teletext services.

Danna, Sammy R. and Margot L. Hoffman. **"KEYFAX Update."** *E·ITV*, January 1984, pp. 66, 68-70.

A report on the first U.S. national commercial teletext service, the KEYFAX National Teletext Magazine.

Elton, Martin C. J., Lynda J. Harris, Joyce H. Thompson, and Stephen M. Zimmerbaum. **"Some Observations on the Use of Teletext."** *Videodisc/Videotex*, Fall 1983, pp. 263-80.

A study of the use of broadcast teletext in Washington, D.C., where 50 decoders were equipped with recording meters.

Feigenbaum, Pamela. **"Captioning Technology Serves New Audiences."** *Current*, December 20, 1983, pp. 1, 4, 5.

News of public TV using closed captioning, with the TeleCaption decoder, to transmit special information such as agricultural price reports and stock prices.

Gupta, Udayan. **"Confusion, Competition Stall Videotex Expansion in U.S."** *Electronic Media*, November 24, 1983, pp. 17, 21.

A review of why many experts think the U.S. videotext industry is slow to mature in spite of its potential.

Stamler, Darcy. **"Teletext and Videotext: Are the Old Market Rules Sufficient?"** *Satellite Communications*, December 1983, pp. 22-24.

An examination of this new industry and its effect on public policy goals, publishing, and local markets.

"Time Closes Its Teletext Doors." *Broadcasting*, November 28, 1983, pp. 60-61.

A report of Time, Inc.'s decision not to pursue the teletext business even after spending more than $25 million developing it.

Wylie, Kenneth. **"Viewtron Viewers: Getting the Picture."** *Advertising Age*, January 9, 1984, pp. M-26, M-28.

A report of the first large-scale commercial videotext service in the U.S., appealing to Florida's "Gold Coast."

Annenberg/CPB Awards To Test New Technology In Higher Education

Can electronic text effectively increase student performance in higher education?

This is one of the questions to be studied in a major series of experiments testing electronic text applications for college-level learning under a grant of more than $1 million from the Annenberg/CPB Project.

The Electronic Text Consortium will carry out the experiments, which are to be completed by the end of 1984. Members of the consortium are: The Center for Communications at San Diego State University and public television stations WHA/University of Wisconsin, WETA/Washington, D.C., KUON/University of Nebraska, and WGBH/Boston.

The electronic text study marks the first full-scale attempt to determine what this new technology can do for higher education, according to John P. Witherspoon, project director at San Diego State University. "Each member of the Consortium will perform different tasks utilizing several variations of electronic text, including videotext, computer simulation and games, and fully interactive networks via personal computers. Activities will be linked and attractive text materials developed so that the combined product will offer higher education a body of experience by which to assess the technology." Focus will be on instruction, but administrative and library applications also will be studied.

Under another Annenberg/CPB grant, the University of South Florida at Tampa will explore the advantages of combining a televised educational course at home with an "electronic mail" component using microcomputers to link students and faculty.

"Congress: We The People" will be the TV course tested over three semesters. "One group of students will take the telecourse as usual, while another group will be supplied in addition with microcomputers at home linked to a mainframe computer at the university," project director William G. Mitchell explained. The study will be completed by fall 1985.

A third grant will underwrite costs of completing a three-part course, "Writers Writing," for public TV broadcast and use in college and adult education classes by spring 1985. The course demonstrates the creative process using both professional and student writers. It will be produced by Learning Designs in association with WNET/Channel 13, both of New York City.

These three grants bring to 17 the number the Annenberg/CPB Project has provided since its inception in 1981.

For further details, contact Charlotte C. Klein Associates, 212/935-4690.

Satellites

"Army TV Satellite Network," by Rick Sonntag, *Satellite Communications*, December 1983, pp. 48-50.

The Army's Health Services Command (HSC) at Fort Sam Houston, Texas, has used a Westar III satellite since 1979 to help educate personnel around the world.

Two daily network programs, each one hour long, are broadcast on various medical subjects. These include obtaining vital signs and charting, alcohol and drug abuse, emergency room techniques, and management of heart disease. One program is directed toward enlisted personnel, the other to professional medical personnel such as physicians and nurses. The programs are produced by Brooke Army Medical Center.

In addition to the satellite video transmission, the programs include two-way telephone communication during live programming. There have also been experiments with teleconferencing and teleconsultations from such places as Letterman Army Medical Center in San Francisco and William Beaumont Army Medical Center in El Paso.

The HSC program has enabled Army personnel to receive continuing medical education credits as well as on-site professional development.

Gupta, Udayan. **"New Technologies Preparing to Make Moves into Market."** *Electronic Media*, December 8, 1983, p. 11.

A report on companies marketing DBS and multichannel multipoint distribution services.

Mermigas, Diane. **"United Satellite Beaming DBS to Chicago."** *Electronic Media*, January 12, 1984, p. 51.

News of United Satellite Communications' service expansion in spite of a Chicago zoning ordinance against rooftop receiving dishes.

"Satellites Expand Horizons of Classrooms on Campuses." *New York Times*, January 15, 1984, p. 16.

A report on colleges participating in the National Committee on Internationalizing Education through Satellites, including University of Maryland.

Sichel, Berta. **"Brasilsat."** *Satellite Communications*, January 1984, pp. 34-35.

A description of Brazil's satellite telecommunication system.

Taub, Eric. **"Battle for the Unknown Market."** *CableVision*, November 21, 1983, pp. 35, 38, 39, 47-49.

A discussion of the many competitors in the DBS market and the viability of home applications.

Taub, Eric. **"High Hopes, Medium Power."** *CableVision*, November 21, 1983, pp. 50-52.

An interview with Nathaniel Kwit, president of United Satellite Communications, Inc., scheduled to launch the first U.S. DBS service.

"Trying to End Flow of Good Money After Bad in DBS." *Broadcasting*, January 9, 1984, pp. 128-29.

A review of Australian media magnate Robert Murdoch's Skyband Inc.—its development and recent indefinite postponement of service.

Installing Your Satellite Uplink: What You Need to Know. Available from the Public Service Satellite Consortium [1660 L Street NW, Suite 907, Washington, DC 20036]. 1983. $350 retail, $295 PSSC members.

A description of how to install a satellite-transmitting earth station that will fit your budget and other resources and how to design a network to meet special needs such as course delivery.

U.S. and Peru Dedicate Satellite Network

The U.S. Agency for International Development (AID) and the government of Peru have dedicated a new communications network that uses satellite technology to help rural communities in Peru.

The model project is the first in a series financed by AID to demonstrate the potential of satellite communications in rural areas in developing countries.

ENTEL-Peru, the national telephone company, is directing the project and linking the three earth stations to other nearby communities using low-cost radio telephones.

Each of the communities will have a public telephone office and an audio conference room. The services are open for public service users, particularly the Ministries of Health, Education, and Agriculture and community workers involved in preschool education programs.

Teleconferencing

Bevan, Patricia. **"Teaching in Paradise via Freeze-Frame Videoconferencing."** *E·ITV*, December 1983, pp. 24, 26, 28-29.

A report of how a sociology professor at the University of Hawaii connected his class with experts on the mainland.

Jafar, A. Reza and Walter C. Sanders. **"Videoconferencing During 1983, and a Proposal for Sharing Information."** *E·ITV*, January 1984, pp. 22, 24-28.

A report of the expanding use of ad hoc videoconferences during the year.

Keiper, Robert. **"Systems Approach to Videoconferencing Puts Emphasis on System Utility Rather than on System Components."** *Communications News*, December 1983, p. 91-92.

A discussion of why a systems approach to planning is essential.

"Videoconferencing Allows Managers from Various Cities to Meet Without Making a Trip." *Communications News*, January 1984, pp. 52-53.

News of how Atlantic Richfield Company links seven of its major regional offices using its ARCOvision network.

Project ALLTEL Sponsors Teleconference On Distance Learning

The Council on Postsecondary Accreditation (COPA) and the State Higher Education Executive Officers (SHEEO) are sponsoring a national video teleconference on Project ALLTEL, the two-year COPA- and SHEEO-sponsored study on assessing long distance learning via telecommunications.

The three-hour program is scheduled for May 31, from 1:00 to 4:00 p.m. Eastern time. It will be telecast to more than 30 sites across the country and will include a live video presentation, a discussion session at each site, and a question-and-answer period with panelists in Washington, D.C. There will be no fee for the teleconference but attendance at each site will be limited.

For more information, contact Project ALLTEL, One Dupont Circle, Suite 305, Washington, DC 20036; 202/659-1406.

Videodisc

"NASA Takes Discs to School," by William Nixon, *E·ITV*, January 1984, pp. 41-42.

NASA's special lecture program, the Aerospace Education Services Project, has served various educational and civic groups for more than 20 years. Today it uses a series of laser videodiscs to illustrate the space program.

These "Space Discs" are prepared at Drew University in Madison, N.J., in cooperation with NASA. Their audiovisual storage capacity allows the lecturers to use huge amounts of data and images from NASA missions. Access to specific material is made possible by an Apple II or an Apple IIe microcomputer that controls the the videodisc player.

This Interactive Learning Demonstration Program has been especially versatile and effective with its Question and Answer Program. Frequently asked questions are programmed into the videodisc, accompanied by a series of still-frames or motion segments that illustrate the answer. Any segment can be repeated as often as necessary by the instructor.

The program has proven to NASA the effectiveness of the optical videodisc as an aid to education that is particularly appealing to young students.

"First Boom in Videodiscs: For Training." *Current*, December 7, 1983, p. 5.

A view that public TV should "position" itself as a producer of training discs, building on work of the Nebraska Videodisc Design/Production Group.

Gupta, Udayan. **"Disc Technology Makes Strides with Information Processing."** *Electronic Media*, November 17, 1983, p. 11.

A report on uses of the compact disc for information processing as well as for video, including recent efforts of Japan's Matsushita Electrical Industrial Co.

Heiss, Michael. **"1984 VCR Guide."** *Videography*, January 1984, pp. 39-40.

A report on the seventh annual guide to videocassette recorders that charts features of 57 different models.

Mirkin, Barry. **"Teaching Electronics on Interactive Videodiscs."** *E·ITV*, January 1984, pp. 43-44.

A report on the benefits of using an interactive computer/video system for teaching electronics in two-year colleges and vocational/technical institutes.

Tiedmann, David. **"A Brief History of Videodisc."** *Educational Computer*, January 1984, pp. 38-39.

A review of videodisc developments, applications, and markets.

"Videodisc Projects Directory." *Videodisc/Videotex*, Fall 1983, pp. 301-302.

A note on the on-going compilation of the many applications of videodisc and optical disc technology.

"VideoIndex '83 Hardware Buyers' Guide." *Video Systems*, November 1983, pp. 29-67.

A comprehensive list of manufacturers, distributors, and service organizations, complete with company mailing addresses.

The Interactive Videodisk Software Market. Available from Frost & Sullivan, Inc. [Customer Service, 106 Fulton Street, New York 10038]. 1983. 288 pp. $1,275.

A report that predicts a ten-fold jump in software sales for interactive videodisc systems by 1987.

IUC Releases Videodisc Feasibility Study

The International University Consortium for Telecommunications in Learning (IUC), formerly the National University Consortium, has released the findings of its 1983 Videodisc Feasibility Study conducted in cooperation with Pioneer Video, Inc. The study evaluated videodisc technology as a cost-effective alternative distribution system for the video components of IUC courses. The evaluation showed that the technology is feasible as an alternative means of program distribution as well as being a valuable teaching aid for faculty.

Eight organizations participated in the study—six IUC member institutions, one broadcasting station, and the Defense Activity for Non-Traditional Education Support (DANTES).

Learning centers were created at hospitals, libraries, military bases, and corporations. Each participant received videodisc copies of the program series "Exploring Language: Thinking, Writing, Communicating," produced by the Consortium. A series of questions for each program segment was developed, enabling participants to use the rapid access capability of videodisc to retrieve selected segments of the programs for review and discussion.

The interdisciplinary nature of the IUC courses enabled faculty members from different disciplines to select content segments to meet their instructional needs.

The feasibility study demonstrated that the use of videodisc technology could reduce a number of costs currently incurred by members. Duplication and broadcasting costs are reduced with the use of videodisc as a distribution system, and when produced in quantity the videodisc is less expensive than videocassette.

The implications of the study go beyond alternative distribution systems to the Consortium's ultimate exploration into interactive video instruction. Although interactive videodisc technology has been used for instruction in some universities and colleges, use has not been widespread, partly due to the lack of hardware in place in the educational market.

For more information, or for a copy of the Videodisc Feasibility Study, contact Ralph France, Maryland Center for Public Broadcasting, 11767 Bonita Avenue, Owings Mills, MD 21117.

Videodisc Technology Aids Mentally Handicapped

Research by Utah State's Interactive Videodisc for Special Education Technology (IVSET) Program has implications for mentally handicapped students. Five IVSET-developed instructional programs indicate that an interactive videodisc system can help assess, diagnose, prescribe, and instruct the handicapped.

The programs were developed with a Pioneer Model 7820-III videodisc player, an Apple II, and a Carroll Manufacturing touch panel.

For a full report of this project, see *Interactive Videodisc for Special Education Technology*, prepared by Utah State University. Available through the ERIC Document Reproduction Service, P.O. Box 190, Arlington, VA 22210. 265 pp. ED 230 187. $22.65 paper, $1.17 microfiche, prepaid.

Videodisc Developers Receive Awards

The Fourth Annual Nebraska Videodisc Symposium, held last September, was highlighted by the conferral of five Nebraska Interactive Videodisc Awards for the development of videodisc technology. Initiated this year, the awards are sponsored by the Nebraska Videodisc Design/Production Group of the Nebraska ETV Network/University of Nebraska.

Award categories and their recipients are:

- Best educational/industrial application—presented to *Maritz Communications, Inc.*, creators of the "Ford Video Communications Network," a complete sales and maintenance training program for Ford and Lincoln-Mercury dealers across the United States.
- Best consumer application—presented to *Videodisc Publishing Inc.* for "The Mystery Disc: Murder, Anyone?", a murder mystery videodisc game that

takes considerable advantage of the interactive capability of consumer videodisc players.

- Best technical achievement—presented to *The Architecture Machine Group* of the Massachusetts Institute of Technology for its marriage of videodisc and computers that demonstrates a high degree of user control of the visual environment.
- Best creative achievement—presented to *Perceptronics, Inc.* for its notable projects such as the Neiman-Marcus Exercycle and the ActionCode System designed for developing instructional programs.
- Best overall project—presented to the American Heart Association for "Computer/Videodisc CPR," recognizing its "thorough exploration of a single topic."

For further information, contact Mary Neal Schutz, KUON-TV/University of Nebraska-Lincoln, P.O. Box 83111, Lincoln, NE 68501; 402/472-3611.

"Lighthouse" Institutions Receive Videodiscs

Videodisc players, computer interface boards, and discs have been placed in Lighthouse Project institutions by the Great Plains National Instructional Television Library (GPN).

The Lighthouse Project is funded by the National Diffusion Network of the U.S. Department of Education. The institutions involved have been identified as "outstanding in their use and teaching of computers." They will include videodisc technology applications in their workshops.

According to GPN's Paul Schupbach, those institutions will offer "a hands-on opportunity for educators in a laboratory setting" and will "arrange short-term loans of the equipment and software to nearby schools."

For further information, contact Paul Schupbach at GPN, 402/472-2007 or 800/228-4630.

Videotape

ITC Surveys College Telecourse Participants

With a grant from the Corporation for Public Broadcasting, the Instructional Telecommunications Consortium (ITC) of the American Association of Community and Junior Colleges is administering a telecourse student survey. The purpose is to gather up-to-date information on the students who enroll in college credit telecourses.

The 16-item survey instrument seeks not only general demographic data, but also information about students' viewing preferences and their reasons for taking telecourses. Both ITC member and non-member institutions are being surveyed.

For additional information, contact Ron Brey, project coordinator, at P.O. Box 2285, Austin Community College, Austin, TX 78768; 512/495-7571.

COMPUSCAN

Articles, books, programs, and projects involving the uses of computer technologies.

Computers

"Functional Distance and the Attitudes of Educators Toward Computers," by Cathleen M. Norris and Barry Lumsden, *T.H.E. Journal*, January 1984, pp. 129-32.

Cyberphobia, fear of computers, is now common among Americans, according to the literature reviewed in this article.

The authors report findings showing that most teachers are "fearful" of computers and that "teachers and administrators range somewhere between apathetic and hostile in their attitudes."

Norris and Lumsden surveyed 450 public school educators in Denton, Texas, using a questionnaires containing three attitude statements representing varying degrees of functional distance between computers and the educators. The statements were: (1) "Computers are valuable tools that can be used to improve the quality of education." (2) "Teachers should know how to use computers in their classrooms." (3) "I would like to have a computer for use in my classroom."

Responses indicated that the educators were highly positive about educational computing in general—85% agreed with statement 1. However, they were less positive when the "distance" factor was introduced—only 66% agreed with statement 3.

They conclude that administrators should take teacher attitudes into consideration when making decisions about putting computers in classrooms. The study suggests that educators "seem to be positive towards computers as long as the function of the computers is removed from their experiential world of practice." Further, classroom teachers can "either facilitate or sabotage the best-laid plans of educational administrators.

Anderson, Ronald M., David J. Lutzer, Nina Ronshausen, Monty J. Strauss, and Derald Wallings. **"A New Approach to Computer Literacy for Elementary Teachers and Others."** *Collegiate Microcomputer*, Winter 1983, pp. 341-47.

A description of a computer literacy course at Texas Tech University for preservice elementary and middle school math teachers, which includes a requirement for actual programming experience.

An examination of the problems facing advocates of home-computer networks: namely, how and to whom to market them.

Berg, Paul and William J. Bramble. **"Computers and the Future of Education."** *AEDS Journal*, Fall & Winter 1983, pp. 101-108.

A discussion of the effects of technology on public schools and its potential for positive reform.

Berger, Joan Davis. **"Too Late for Sue."** *Electronic Education*, January 1984, pp. 25-26.

Report of the Cypherlog, a computerized visual communications device for multiple sclerosis victims, invented by John Kramer.

Bork, Alfred. **"Two Examples of Computer-based Learning on Personal Computers."** *AEDS Journal*, Fall & Winter 1983, pp. 49-53.

A report from the University of California, Irvine, on scientific literacy and helping students improve reasoning skills with computers.

Boyanov, Todor. **"Microcomputers and Informatics Education at the University Level."** *T.H.E. Journal*, January 1984, pp. 123-24.

A description of possibilities and methods of microcomputer use and application in various departments at the University of Sofia, Bulgaria.

Byrkett, Donald L. **"Using Computers to Enhance the Content of Undergraduate Mathematics Courses."** *Collegiate Microcomputer*, Winter 1983, pp. 365-71.

Suggestions for the appropriate use of computers as a tool, with examples cited from a statistical forecasting class.

Clement, Frank J. **"The Portable Computer."** *Performance & Instruction Journal*, December 1983, pp. 27-28.

An evaluation of the usability of portable computers such as the Radio Shack Model 100.

David, Chen and Nachimias Rafi. **"The Design and Implementation of an Introductory Computer Literacy Course for Teachers and Educational Decision-Makers."** *T.H.E. Journal*, January 1984, pp. 113-16.

A description of a Tel Aviv University, Israel, course for faculty and administrators that also appeals to graduate students.

Diem, Richard A. **"Technology in Teacher Education Programs: Promises Unfulfilled, Problems Unresolved."** *Collegiate Microcomputer*, Winter 1983, pp. 349-53.

An explanation of the implication for teacher training and the mass adoption of computers in public schools.

Downing, Diane E. **"Computer Conferencing: An Educational Alternative."** *Educational Technology*, Winter 1983, pp. 1-4.

A review of several journal articles on computer teleconferencing technology.

Elliot, David. **"New York Institute of Technology Links Computers Via Data Communications Net."** *Communications News*, January 1984, p. 46.

A description of NYIT's Digital Communications Associates system to link faculty, staff, and students at three campus centers.

Evans, Elizabeth A. **"Microcomputers: An Interlibrary Loan Application."** *Special Libraries*, January 1984, pp. 17-23.

A description of a system for local processing of interlibrary loan requests using DBase II.

Ferrarini, Elizabeth. **"The Know-It-All Connection."** *Link-Up*, December 1983/January 1984, pp. 20-26.

A description of Dialog Information Services Inc., its variety of databases, services, and costs.

Friedman, Edward A. and Joseph J. Moeller, Jr. **"The Stevens Personal Computer Plan."** *EDUCOM Bulletin*, Fall/Winter 1983, pp. 12-15.

A report of personal computer use by 500 first-year students at Stevens Institute of Technology.

Gilchrist, Bruce. **"The Impact of Computers on Employment."** *Information Resource Management*, November 1983, pp. 10-13.

A review of U.S. experience of the introduction of information technology.

Harrison, Charles H. **"Business Information Processing Education for the Disabled (BIPED)."** *Educational Computer*, January 1984, p. 20.

A report on a computer programming training and placement program in Stamford that is a nonprofit corporation wholly owned by 20 Fortune 500 companies in Connecticut.

Hilldrup, Robert P. **"The Micro in the Chemistry Lab: An Aid to the Visually Impaired."** *Educational Computer*, pp. 29, 30, 46.

A description of the Dumb Talking Box, a desktop multimeter with speech output developed at East Carolina University for a blind chemistry student.

Holznagel, Donald C. **"Evaluating Software."** *AEDS Journal*, Fall & Winter 1983, pp. 33-40.

A review of options for local school personnel and suggestions on what factors to consider in evaluating software.

Johnson, Everett L. **"Computing and Handicapped Education."** *Educational Computer*, January 1984, pp. 27-28.

A report on the use of PLATO courseware at Wichita State University Rehabili-

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tation Engineering Center to help educate the handicapped.

Johnson, James W. **"From Plans to Reality at the University of Iowa."** *EDUCOM Bulletin*, Fall/Winter 1983, pp. 45-48.

A description of Iowa's experience in implementing an information technology plan.

Johnson, Richard R. **"Computer Literacy: A Longer View."** *EDUCOM Bulletin*, Fall/Winter 1983, pp. 2, 3, 8.

A description of six scenarios to predict the place of computer literacy in 1993 and how it will be integrated into the curriculum.

Judd, Robert C. **"Networks for Education."** *Educational Computer*, January 1984, pp. 18, 19, 47.

A report on computer networking applicable for schools and school systems.

Knapper, Christopher K. and Barry L. Wills. **"Teaching Computing Across the Curriculum: A Canadian Viewpoint."** *T.H.E. Journal*, January 1984, pp. 98-102.

A report on the University of Waterloo's goal to teach technological literacy to all students in all disciplines.

"The Latest Industry Craze." *Monitor*, November 1983, pp. 11-12.

A view of online systems, the need for intermediaries, and the outlook for knowledge-based systems.

Lazear, Thomas J. **"CAD Training in Industry and Education."** *T.H.E. Journal*, January 1984, pp. 138-41.

A report on the need for increased computer-assisted design training and the relationship between industry and education for the labor market.

Martin, C. Dianne and Rachelle S. Heller. **"Presenting Computer Literacy for the B.C. Generation at the Smithsonian Institution."** *T.H.E. Journal*, January 1984, pp. 125-26.

A report on common adult frustrations toward computers and a one-day seminar to overcome them.

McDermott, Brian. **"Shopping for Computer Equipment."** *Link-Up*, December 1983/January 1984, pp. 28, 30-33.

An assessment of the exploding computer industry and the difficulties in judging hardware and software.

"Micros: Envy, or Pity, the Buyer?" *Monitor*, November 1983, pp. 6-10.

A review of the microcomputer boom and the problems in decisionmaking for an organizational purchase.

Moore, John W., Elizabeth A. Moore, and J. J. Lagowski. **"Project SERAPHIM: Clearinghouse for Materials for Microcomputer Users in Chemical Education."** *Collegiate Microcomputer*, Winter 1983, pp. 305-309.

A report of a NSF-funded project that informs chemists about uses of micros, software, utilities, and workshops.

Moss, Carol. **"Online Learning."** *Link-Up*, December 1983/January 1984, pp. 13-14.

A description of an electronic education network, started by Telelearning Systems, that offers about 170 courses.

"Real-Time Computer System Automatically Selects Lowest Cost Routing of Phone Calls." *Communications News*, January 1984, p. 91.

A description of a stand-alone system, Telemiser, introduced by Communique Telecommunications.

Roblyer, M.D. **"Toward More Effective Microcomputer Courseware Through Application of Systematic Instructional Design Methods."** *AEDS Journal*, Fall & Winter 1983, pp. 23-32.

Suggestions for making instructional design more practical for educational development.

Shur, Paul and Sharon Lobello. **"Robots: The Next Educational Challenge?"** *Electronic Education*, November/December 1983, pp. 10, 11, 15, 16.

A discussion of the robotics industry and its implications for both the home and education.

Sturdivant, Patricia. **"Technology Training: In Search of a Delivery System."** *AEDS Journal*, Fall & Winter 1983, pp. 55-65.

A report of a microcomputer training program in the Houston Independent School District.

Thomas, Byron H. and David R. Ure. **"Educational Uses of Microcomputers at**

COMING THIS SUMMER

From the Center for Learning and Telecommunications . . .

Answers to the who, what, and where of telecourses in higher education. A new sourcebook to be published this summer provides descriptions of some 75 telecourses and audiocourses produced for higher education. Listings include information on the level, content, format, ancillary materials, and availability of the courses.

Inventory of Baccalaureate-Level Telecourses and Audiocourses, Spring 1984, has been compiled through questionnaires and interviews with producers throughout the U. S. You'll find it detailed, up-to-date, and invaluable.

TELESCAN readers can receive copies at the special prepublication of $15 ($5 off the regular price). Orders must be postmarked by *June 1* to be eligible for the discount. All orders must be prepaid; add $2 postage for orders outside the U. S.

To order, check the box on the order form on the reverse side.

the Iowa State Men's Reformatory." *Collegiate Microcomputer*, November 1983, pp. 329-32.

A review of an educational program operated by Kirkwood Community College under contract with the state.

VanHouweling, Douglas E. **"Information Processing Futures for Higher Education."** *EDUCOM Bulletin*, Fall/Winter 1983, pp. 35-40.

A discussion of the future of information technology in academic institutions and strategies at Carnegie-Mellon University.

Wright, Leslie J. **"A Clustered Microcomputer System in a Continuing Education Office."** *Collegiate Microcomputer*, Winter 1983, pp. 333-39.

A report of how a computer system is used in a California State University, Chico, office.

Computer Program Aids College Choice

A new software package has been developed by the College Board to enable students to match their interests and qualifications with specific two- or four-year colleges. More than 2,700 institutions are on file, based on the Board's *College Handbook*.

Although the package, called "College Explorer" was designed for use by counselors, it is easy for students to do their own searching. College features such as curriculum offerings and geographic location are included.

"College Explorer" consists of four floppy discs, manuals for both counselors and students, student worksheet, technical specifications, and a copy of the most recent *College Handbook*. Selling for $149, it is designed for use on the Apple IIt and IIe.

Interactive Video

Blum, Lester. **"Computer Generated Graphic Tutorials in Economics."** *Collegiate Microcomputer*, November 1983, pp. 289-92.

A description of several applications of microcomputer programming in the development of economics tutorials on videocassettes.

Gelman, Morrie. **"Interactive System Offers Videogames via Telephone."** *Electronic Media*, November 24, 1983, p. 22.

A report of a two-way television demonstration by Skip Alexander Productions and Barry & Enright Productions.

Hershberger, Linda. **"How Interactive Training Affects Corporations."** *E·ITV*, January 1984, pp. 64-65.

An examination of the organizational, psychological, and job-related impact of the incorporation of interactive video systems into the workplace.

Koyler, Diane. **"Big Business Is Branching Out into Disc: How Five Companies Are Accessing Interactive Technology."** *Videography*, January 1984, pp. 30-36.

Descriptions of five unique applications of interactive video for such personnel as sales people.

Smith, Judson. **"How to Design Interactive Training Programs."** *Training/HRD*, December 1983, pp. 30-32.

A look at the common denominators of interactive instruction, with a note on flexibility as the key factor.

Yampolsky, Michael. **"Word Processor Training on Intelligent Videodisc."** *Videodisc/Videotex*, Fall 1983, pp. 281-89.

A report on the Wang Word Processor Intelligent Learning Program, developed by Eastman Kodak to train personnel with videodiscs.

MACROSCAN

Articles, books, programs, and projects involving the uses of combined technologies.

"College Opens High Tech Door to Teens," by Barbara Stover, *Electronic Education*, January 1984, pp. 33-34.

With the support of Mayor Henry Cisneros, San Antonio junior and senior high school students are attending classes at San Antonio College. Regular college faculty teach the afternoon science, math, and computer courses open to the teenagers at High Technology High School after their regular morning classes at their home schools.

The objective is to give the students advanced courses that will help them be admitted to competitive four-year colleges and major in engineering and the sciences. While taking San Antonio College classes, they are able to use facilities not available in the local schools, including the laboratory facilities, library, and computer equipment.

The college's computer lab, donated by Southwest Technical Products Corp., offers a special opportunity for students to learn programming, technical writing courses, and logic. A wide range of science courses are also available.

Approximately 80 students have been admitted on the basis of their grades and recommendations from teachers and counselors. Plans for a second phase of the program in 1985 call for a technology-related track to prepare high school graduates for entry into technological jobs.

High Tech High School is administered by the Alamo Community College District and supported by United San Antonio, an organization of business people interested in economic development.

Breslin, Richard D. **"Implementing Computing Planning in a Liberal Arts Setting."** *EDUCOM Bulletin*, Fall/Winter 1983, pp. 41-44.

A call for traditional liberal arts colleges to embrace technology and a description of the program at Iona College.

Bunting, Graham. **"Social Change and Information Technology."** *Information Resource Management*, November 1983, pp. 43-47.

A roundtable discussion of the implications of major technological change by six leading academics and industrialists.

Christen, Kate and Peggy Gladstone. **"Survey of the States."** *Electronic Learning*, November/December 1983, pp. 37, 38, 40-54.

A report on how the 50 state governments are promoting educational computing, including a state-by-state breakdown that summarizes the state mandate, use, and structure and funding.

"Directory of Program Sources." *E·ITV*, December 1983, pp. 34-57.

A listing of companies, schools, individuals, and others who have programming to sell, rent, lease, or loan for free.

Evans, John. **"Negotiating Technological Change."** *Information Resource Management*, pp. 14-17.

A trade union view of the introduction

of new technologies in the work place.

Kay, Alan. **"Learning vs. Teaching with Educational Technologies."** *EDUCOM Bulletin*, Fall/Winter 1983, pp. 16-20.

A look at future technologies and their educational implications by a vice president of Atari.

Klassen, Daniel. **"Computer Literacy Revisited."** *AEDS Journal*, Fall & Winter 1983, pp. 41-48.

An examination of trends, goals for computer literacy, and obstacles facing educators.

Masterton, Pauline. **"A Futurist Looks at Edtech, or Wheel-Reinventing Reconsidered."** *T.H.E. Journal*, January 1984, pp. 143-46.

A discussion of technology options that can revolutionize everyday life, particularly in education.

Nishimura, Toshio and Yoshihiro Maekawa. **"A Management Oriented Systems Design Method Used to Train Systems Engineers at Japan's Institute of Information Technology."** *T.H.E. Journal*, January 1984, pp. 108-11.

A report of major features of a training program using case studies to teach problem-solving.

Rivera, Henry. **"Minority Opportunities in Telecommunications."** *Access*, November 1983, pp. 1, 5.

A report by an FCC Commissioner on the FCC's program to promote minority ownership of broadcast facilities.

Rudin, Harry. **"Some User Views of Telecommunications Needs."** *Communications News*, January 1984, p. 86.

An overview from industrial, banking, military, and credit card industry perspectives.

Spinrad, Robert J. **"The Electronic University."** *EDUCOM Bulletin*, Fall/Winter 1983, pp. 4-8, 15.

A prediction of the electronic university from the perspectives of student, professor, and administrator.

Vallee, Jacques. **"They Want Well Trained Humans."** *Information Resource Management*, November 1983, pp. 13-14.

An excerpt from Vallee's *The Network Revolution* describing the office of the future.

Inventory of Federal Funds Distributed to Public Telecommunications Entities, Fiscal Year 1981. Corporation for Public Broadcasting [1111 16th Street NW, Washington, DC 20036]. 1983. 14 pp. free.

A report by the CPB Policy Development and Planning group, based on a survey assisted by the Office of Management and Budget. The findings show that more than $32 million was distributed to public telecommunications entities during the year.

New Information Technology in Education, by David Hawkridge. Johns Hopkins University Press. 1983. 238 pp. $20.

An international handbook based largely on the author's experience with the British Open University. The book gives examples at all levels of education.

Serving Learners at a Distance: A Guide to Program Practices, by Charles E. Feasley. ASHE-ERIC Higher Education Research Report No. 5, 1983. Available from the Association for the Study of Higher Education [Dept. TS, One Dupont Circle, Suite 630, Washington, DC 20036]. 1983. 66 pp. $5 AAHE, AERA, AIR, ASHE members; $6.50 others.

An overview of distance education by the director of the Independent and Correspondence Study Department at Oklahoma State University. This report, which can serve as a primer for institutions and academic programs, covers faculty issues, media, support services, and organization for distance education.

Teleconferencing: A Guide for Associations. Available from the American Society of Association Executives [1575 Eye Street NW, Washington, DC 20036]. 1983. $35 retail, $20 ASAE members.

A guide for association executives that features an in-depth study of a teleconferenced event, discussions of its promotion, a glossary of terminology, data on hardware programming, and guidelines for selecting a consultant.

Study to Chart Course Of Teleconferencing

A recently launched investigation into uses and markets for teleconferencing can help executives choose the right system, find a suitable vendor, and discover the strategic value of teleconferencing for their company.

"The study, *Teleconferencing Applications and Markets 1984-1990*, will be a definitive statement on the technology's current status and growth potential in North America and Europe," says Lorne Parker, director of the Center for Interactive Programs (CIP) at the University of Wisconsin-Madison.

Communications Studies and Planning of London, England, directed by Stephen Connell, will help conduct the investigation. The five-year, $650,000 investigation will have 11 data-gathering tasks, including interviews with equipment and service vendors as well as market surveys of teleconferencing users and non-users on both continents. It will also include on-site visits to 50 organizations, some of which have teleconferencing and others that have typical user characteristics but have not adopted the technology.

Many U.S., Canadian, European, and Japanese organizations have subscribed to the study and are sponsoring the research. The first phase of the project, which began in October 1983, will be completed by June 1984.

For further information, contact Lorne Parker, CIP director, University of Wisconsin-Extension, Radio Hall, Madison, WI 53706; 608/262-4342.

Contributors

Contributors to this issue of TELESCAN are listed below. The efforts of these individuals have been critical to our monitoring activities. ***We urge those of you who wish to become part of this important information network to submit to TELESCAN items of potential interest to our broadly based audience.***

Lynn Barnett
ERIC Clearinghouse on Higher Education

Anne L. Bryant
P.M. Haeger and Associates, Inc.

Janet D. Froom
Project ALLTEL

Jinny Goldstein
PBS Adult Learning Service

James Zigerell
Instructional Telecommunications Consortium, American Association of Community and Junior Colleges

Instructional Videodisc (continued from page 1)

as a good brassboard to explore these types of issues.

These three aspects of videodisc are not in any way unique to instructional applications. The capabilities for multimedia storage, interaction, and digital representation are the properties which make videodisc of interest for all applications. However, more progress has probably been made exploring these aspects in the instructional domain than in any other area. For this reason, it is worthwhile to study instructional videodisc projects for findings which apply to the entire realm of information sciences.

Multimedia storage

Each side of the videodisc can store 54,000 frames of material, or 30 minutes of motion with two tracks of audio, or some combination of the two. (All discussion in this article refers to optical type videodisc players [i.e., reflective or transmissive]. The capacitance type of players [CED or VHD] have not been widely used for instructional applications.) In practice, the capacity is reduced by current limitations on players and the disc manufacturing process as well as the tendency of most developers to include at least two of each still frame to allow for errors in the production process. Furthermore, a standard page of printed text requires about five videodisc frames when reformatted [1]. Still, even taking these considerations into account, a single videodisc side can equal dozens of training manuals or slide/tape programs and provide many hours of instruction.

As an example, consider a videodisc on welding produced by the National Training Fund for the Sheet Metal and Air Conditioning industry [2]. One side consists of 13 chapters involving two motion sequences (from an existing film) and 500 still frames. The still frames include technical specifications on metals and gases for different types of welding, graphics symbols, a glossary, and indexes for each chapter. In addition, a series of multiple choice questions following the two motion sequences were developed for a programmed version of the disc. If the viewer answers a question incorrectly, the secion of the film with the answer is automatically replayed. . . .

[In instructional and other] experiences with videodisc as a multimedia storage medium. . .a number of problem areas have emerged. Indexing presents a difficulty in terms of making it easy for a user to find something quickly. Typically, a series of hierarchical subject menus will be presented. This allows N^m screens to be indexed where N is the number of choices on each menu and m is the number of such indexes (i.e., depth.). Thus, if each menu has five choices and all menus go four deep, 1125 different screens can be indexed. If a disc contains 20,000 addressable images, this is clearly insufficient.

Alternative indexing schemes involve keyword or alphabetical searching. However, this normally necessitates putting the videodisc under control of an external computer. Probably the most innovative solution to the indexing problem with videodisc is the Spatial Data Management approach in which all information is visually represented and arranged into "data planes." The user searches through such data planes using a joystick and buttons which allow "zooming-in or out" of different planes [3]. The problem of finding a simple indexing scheme for videodiscs is the same faced by the field of information retrieval with large databases.

A second problem area is the limited storage capacity for motion and audio on a videodisc relative to still frames. With a maximum of one hour on both sides, videodisc has less capacity than VHS cassettes (six hours per side). On the other hand, with videodisc it is possible to selectively delete redundant frames from a motion sequence thus reducing its duration without noticeably affecting the motion quality. On current videodisc players, each second of audio requires 30 frames to store. Thus, if a 10-second narrative is provided for a single visual, 300 frames are used up for the audio plus one for the visual. What is needed is a videodisc player with still frame audio capacity in which audio can be digitally compressed for storage. Prototypes of players which allow up to 17-30 seconds of audio to be stored in a single frame have been demonstrated and are now commerically available.

A third problem area affecting the use of videodisc for multimedia storage is the image quality possible. Many items (e.g., maps, blueprints, printed pages) cannot be displayed in their entirety but must be shot in sections or reformatted. The display resolution currently possible with videodisc is limited significantly by the fact that the video world is governed by NTSC broadcast television standards. These standards affect not only the relatively low resolution of TV receivers, but also the limited bandwidths of the signal used in recording. While it is possible to buy high resolution video monitors, it is not possible to record video bandwidths higher than 4-6 megahertz even though it is quite possible to store a high bandwidth signal on videodisc. Thus, it is technically possible to develop a recording and playback system for videodisc which would provide much higher image quality than is presently available. Equipment for such a system, however, would be incompatible with broadcast video and considerably more expensive.

The three problem areas just discussed represent existing limitations of videodisc as a multimedia storage medium. As far as instructional applications are concerned, these problems are not significant obstacles. The only major obstacle to the widespread usage of videodisc for multimedia in instruction storage is cost (both production and equipment). Videodisc economics are discussed later in this article.

Interactivity

The interactivity of a videodisc can be described in two different ways: in terms of the type of programming involved and the type of instructional strategy used. The former depends upon the type of videodisc system selected and the latter is determined by the purposes and objectives of the instruction. Both have significant effects on the costs of developing and delivering videodisc programming.

Three levels of interaction are possible with existing videodisc systems. The use of a consumer player allows a *manual* level of interaction. The student can use frame numbers or chapter stops to branch to specific segments on a disc, turn audio instructions on or off, and use single frame advance to see answers to questions. No programming of the disc is required for this level of interaction. . . .

The second level possible is *internally programmed* interactive capability made possible by small programs (1024 bytes) that are stored on the videodisc and can be executed by an industrial type player. At this level of interactivity, automatic branching and simple answer analysis (based upon single key input) is possible. This allows testing with feedback on correct/incorrect answers, as well as tailoring of sequences to menu choices or question responses. However, since the programs are small, the degree of branching is limited. Most of the discs

produced for commercial training applications so far have involved this level of interaction [4,5].

The third level of interaction possible is an *externally programmed* videodisc in which the player is controlled by a microcomputer. The use of the microcomputer allows full-scale programs to be written to control the presentation as well as the storage of student response data on peripheral storage devices (such as floppy disks). It also allows computer-generated text and graphics to accompany (or overlay) the videodisc images; full alphanumeric, touch, or speech input; and adaptive branching (i.e., branching based upon the student's cumulative performance). Because of the range of capabilities possible, computer-controlled videodisc is often called "intelligent" videodisc. Most of the prototype educational videodiscs that have been developed to date have involved this level of interactive capability [6,7].

The second way of defining interactivity is in terms of the instructional strategy employed. Five major types of instructional strategies are possible with videodisc. *Drills or tests* simply involve the presentation of a question or problem followed by selection or input of the answer and appropriate feedback. *Tutorials* consist of the presentation of concepts, examples, or procedures concerning a particular topic followed by questions and problems. Textbook chapters or a single module in a slide/tape program are typical examples of tutorial strategies. *Simulations and games* involve a causal model of a process, activity, or piece of equipment in which the student practices decision-making or problem-solving skills by trying to operate or understand the model. A game differs from a simulation in that a competitive element is present (i.e., beat the clock or an opponent) and sometimes fantasy is involved.

A *socratic or dialog* strategy allows the student to learn via conversational interaction with a knowledge base. This requires natural language or speech input capability (or something close), information organized in semantic networks, and the use of tutoring rules. Finally, *learner control* is essentially a "nonstrategy" in so far as it puts responsibility almost entirely in the hands of the student for the sequence and nature of instruction presentations. Information is organized into various kinds of instructional components (e.g., rules, concepts, examples, objectives, helps, etc.) and the student must decide the sequencing and organization of instruction.

Obviously, each of these different types of instrucational strategy entails a different way of organizing videodisc materials. Furthermore, as the sophistication of the instructional strategy increases, the branching and hence programming becomes more complicated. Since most researchers have opted to use fairly sophisticated instructional strategies with videodisc (e.g., simulations), they have required externally programmed systems. On the other hand, those practitioners trying to put videodisc into classroom use have used simpler strategies (e.g., drills, tutorials), requiring only manual or internally programmed types of videodisc systems. Also, the development and equipment costs tend to increase sharply as more sophisticated instruction strategies and higher levels of interactivity are employed.

A number of outstanding projects have been completed which demonstrate the nature of interaction possible with videodisc. One of the most interesting is the cardiopulmonary resuscitation (CPR) training system developed by the American Heart Association [8]. This system involves an industrial videodisc player, two video monitors, and a specially instrumented "Resusci-Annie" mannequin, all under microcomputer control. One monitor is used to present motion or still frames from the videodisc while the other presents computer generated graphics and text. This system can provide the detailed coaching and feedback necessary to teach a person how to administer CPR. By means of sensors on the mannequin, the computer can track psychomotor parameters such as hand placement, pressure applied, and rhythm.

Another example which illustrates how interactivity can be used to individualize instruction according to different educational levels is "The Puzzle of the Tacoma Narrows Bridge Collapse" videodisc developed at the University of Nebraska [9]. This disc allows the student to study and experiment with the basic principles of physics underlying the collapse of the Tacoma Narrows bridge. The material on the disc is presented at three levels of student ability: the *green* level provides qualitative explanations and requires a similar level of performance from the student; the *blue* level presents numerical calculations and expects the same from students; and the *red* level involves algebraic reasoning and requires the student to observe the functional relationships between variables. The disc contains nine experiments at these three levels. This disc is now distributed commercially by John Wiley & Sons. . . .

The kind of interaction possible with videodisc can be quite sophisticated. This interaction can be used to individualize instruction in various ways or increase degree of student involvement and motivation in the learning activity. While most videodisc applications are described in terms of individual instruction, there is no reason why videodisc cannot be used to increase the interactivity of a group activity (i.e., the typical classroom lecture). Interactive videodiscs can be used by a teacher to increase his or her instructional effectiveness [10].

Electronic media

Presently emerging computer/communications technologies such as videotex and videoconferencing are likely to have as much effect in the next two decades as radio, television, and telephone technologies have had in the past half-century. Videodisc links the print and film media of the past and present with these newer electronic means of information representation and transmission. Therefore, it is interesting and worthwhile to examine current videodisc projects in terms of what clues they may provide about the shape of future information systems.

One way of framing the question is to look at efforts in which videodisc serves as a replacement for existing media or represents a novel approach to an information need. The U.S. Army has funded two such projects: SIDE (Soldier Information Delivery Equipment) and JOIN (Joint Optical Information Network). SIDE was conducted to determine if videodisc-based electronic job aids could improve the performance of soldiers in tank maintenance relative to the use of traditional printed manuals [11]. As is typical of maintenance documentation for complex weapon systems, the manuals consisted of thousands of pages. When the performance was measured in actual repair tasks, it was found that the electronic job aid resulted in a time savings of 23-29% over the manuals. Soldiers were able to find the maintenance information they needed faster with the electronic system than with paper.

JOIN is an automated management information system for recruiting: it helps

identify the aptitudes and interests of recruits, shows the nature of different military occupational specialties, produces the forms and reports required for enlistment, and provides training for recruiters [12]. Videodisc under control of a microcomputer is used to show job requirements and to provide recruiter training. The microcomputer administers tests and generates the appropriate forms and reports. It also transmits recruiting data from the field office to the central recruiting command. The Army is currently placing at least one JOIN system in each of its 2200 recruiting offices throughout the U.S. It is anticipated that JOIN will improve the matching of soldier abilities and interests to military jobs; reduce the amount of time required to test recruits and complete enlistment; improve the effectiveness of recruiter training; and increase the standardization and availability of recruiting data. . . .

These examples suggest ways in which videodisc under computer control can improve the quantity or quality of information handling transactions and are propaedeutic to full-scale electronic information systems.

Videodisc projects have identified many research areas for electronic media. One of these, the design of good screen displays, has already been mentioned earlier. Another issue is the use of one or two (or possibly more) screens. Many computer-controlled videodisc systems use two simultaneous screens: one for video displays and the other for computer-generated displays. However, other systems use just one screen, overlaying computer-generated and video displays or presenting them sequentially. There is little data available that pertains to which approach is better; multi-image slide shows probably represent our best source of hypotheses.

Yet another issue is tradeoffs between the use of computer graphics versus video graphics. When is it better to program a graphic display rather than shoot with video? As computer graphics systems become increasingly capable of producing very realistic images, this question will become more difficult to answer. It is quite possible that one day soon we will be able to generate such realistic-looking computer graphics that video becomes obsolete (witness the state of the art in Hollywood special effects). On the other hand, computer-generated and video graphics may become so closely intertwined that they may effectively merge into a single electronic graphics technology.

Videodisc also raises major challenges to the traditions of copyright and publishing. Because of the multi-media storage capabilities of videodisc, different media with different copyright regulations are combined together in one physical unit. Which laws apply to the disc as a whole? . . .

Economics

Many of the different lines of thought discussed so far can be brought together when the economics of videodisc is considered. As with most new technologies, cost factors play a critical role in the acceptance and utilization of videodisc.

Videodisc costs can be divided into development and delivery components. Development costs include the design of the instruction on the disc, production of the materials, premastering and mastering of the disc, duplication, and distribution. Because of the storage density of the disc, considerable savings over other media are possible for duplication when large numbers of discs are required. . . . Videodisc players currently cost about the same or less than videocassette players/recorders (but more than slide projectors). Thus, as far as duplication and delivery costs are concerned, videodisc is economicaly attractive. . . .

However, design and production of videodisc is more expensive than any other media, except perhaps computer-based instruction. Many factors affect videodisc development costs including:

- the ratio of motion to still frames,
- the extent to which existing materials (still or motion) can be used,
- the degree to which computer-generated text and graphics can be used for still frames,
- the size and experience of the development team,
- the kind of player and microcomputer being used,
- studio versus location shooting of motion sequences,
- the type of editing facilities available,
- the overall quality desired.

The nature and extent of interactivity underlies many of these factors. Thus, the more complex the branching and programming, the higher the cost of producing the disc. The total cost of developing an instructional videodisc can range from $15,000 to $150,000 depending on all of these considerations.

When videodisc is conceptualized primarily as a multimedia packaging medium where duplication and player costs are most important, the economics are very favorable. When viewed as an interactive medium, the development costs can represent a substantial amount, much higher than noninteractive media such as print or video. As an electronic medium, the costs of videodisc are difficult to assess since it is being used to do things not possible with other media. If we could place values on the time savings and increased information availability in projects such as SIDE [or] JOIN, . . .videodisc would likely prove quite worthwhile. In short, the economics of instructional videodisc depend upon the context within which it is seen. The disc can accurately be described as very inexpensive, very expensive, or neither. Thus, videodisc costs are as enigmatic as the medium itself.

Conclusion

Enough research has been conducted with videodisc in the instructional domain to demonstrate its enormous potential for multimedia storage, interactive instruction, and electronic information delivery. . . .

It should be kept in mind that videodisc technology is just barely beyond its infancy. A great many changes are likely to take place in terms of delivery equipment capabilities. Thus, definitive judgments about the potential of videodisc are premature—for instruction or any other application area. A number of exciting things have been demonstrated and there is undoubtedly much more to come. In the age of lasers and microelectronics, everything can change very quickly. Yesterday's dream can truly be tomorrow's reality.

References

1. Schipma, P. B. "Videodisc for storage of text." *Videodisc/Videotex.* 1(3):168-172; 1981.
2. Drucker, R. "The videodisc for training and education." *Videodisc News.* 3(7/8):14-17; 1982.
3. "HumRRO instructional applications of spatial data management." *Videodisc/Videotex.* 2(2):1981-1987; 1982.
4. Stern, V. "Banking on the disc." *Videography.* September:52-54; 1981.
5. "How IBM uses videodisc for customer training." *E-ITV,* March:31-33; 1981.
6. Molnar, A. R. "Microcomputers and videodisc: Innovations of the second kind." *T.H.E. Journal.* 7(6):58-62; 1980.
7. Kehrberg, K. T.; Pollack, R. A. "Videodiscs in the classroom. An interactive economics course. *Creative Computing.* January:98-102; 1982.
8. Rathburn, R. "Unique interactive training

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system designed to save time, money, lives." *Video User.* August 1981.
9. Fuller, R. G. "The puzzle of the Tacoma Narrows bridge collapse." *Nebraska Videodisc News.* March:3(2); 1981.
10. Daynes, R.; Brown, R. D.; Newman, D. L. "Field test evaluation of teaching with videodiscs." *E-ITV.* March:54; 1981.
11. "The video Patsearch system: An interview with Peter Urbach." *Videodisc/Videotex.* 2(1):30-37; 1982.

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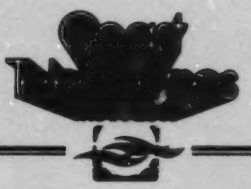

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Conference With Audio, But Send Video Ahead

George Avgerakis, creative director, Avekta Productions.
Reprinted from E&ITV, February 1984.

"TELECONFERENCING." The word has power. At one time, it may have been a secret word whispered among the technological elite and their masters within the dark, esoteric cabalas of corporate management—a manifestation of a science fiction writer's fantasy—ultimately a "picture-phone communication system." Unlike other, simpler means of communication, e.g., an inter-office memo, a phone call, or a meeting, the teleconference represents an extraordinarily complex video production and transceiving system and commands a six-figure budget. The question is, can one achieve a complete teleconference effect (aural and visual) within the so-called budget restraints of the average industrial producer?

The Sandoz solution

One major responsibility of Dr. Robert del Vecchio, head of the Education Department at Sandoz Pharmaceuticals, is to maintain an open line of worldwide communication with over 350,000 medical professionals who use Sandoz products in therapeutic regimens. Over the last two years the Education Department at Sandoz has gathered together more than 6,000 doctors and medical professionals in 280 hospitals, nationwide, to conduct teleconference seminars.

Dr. del Vecchio's typical approach to preparing a teleconference seminar is to choose such topics of general and current concern as "The Diagnosis of Depression" or "Altzheimer's Disease," one of the main manifestations of dementia for which a cause and a cure have yet to be determined. He may then sign a world authority on the topic to serve as a participant in or leader of the seminar.

"When I first looked into the idea of satellite teleconferencing," says del Vecchio, "I could see right away it was well beyond our means. However, it seemed that we could afford at least the audio part of a teleconference, using normal telephone connections instead of a satellite."

The cost of producing a teleconference varies according to the type of conference selected; whether it is audio only, one-way video, or two-way video. In the past few months, a number of articles have appeared regarding various means of reducing a teleconference budget. The articles pointed out the single

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Careful Planning Boosts Effectiveness of Audio Conferences

James L. Ratcliff, professor of higher education, Iowa State University

"Conference with Audio, but Send Video Ahead," by George Avgerakis, is a fine example of the use of audio conferencing. It also illustrates several important points regarding the effective use of this medium for educational purposes.

Fine examples of the use of audio teleconferencing too frequently come to us by accident rather than planning. This is true of Avgerakis' description of the Sandoz Pharmaceutical Company's audio conferences. Often educators and trainers first try the more complex, perhaps more glamorous, and certainly more expensive mediums first. Then, they turn to an audio conference as a cost-saving alternative.

Sandoz first wanted to gather the doctors and medical professionals together using a video and audio teleconference, but found that media mix to be complex in production, in transceiving, and in cost. As a lower cost alternative, Sandoz provided continuing education to 6,000 doctors and staff in 280 hospitals nationwide using audio conferences and prerecorded videotapes.

The video portion of the Sandoz seminars was a result of planning backwards

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In this issue . . .

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NEA establishes satellite network serving affiliates in 11 states ..... page 5
TechNet, new 24-hour electronic network, offers mail service, information on educational software ..... page 8
Annenberg/CPB Project releases guidelines for 1984 proposals ..... page 9

SCAN

Dear Subscriber:

In this era of microwave, satellites, and computers, it's hard to think of the phone as a state-of-the-art communications tool. But of course it is. None of these so-called new technologies can beat the phone's conferencing ability in cost, ease, and simplicity. An institution need not invest millions of dollars in hardware nor months of personnel training to connect multiple sites for information exchange. It can all be accomplished through audio teleconferencing. And if visual communication is necessary during the conference, there is a way to add video to an audio conference for very little cost.

This issue of *TELESCAN* brings you two articles about the use of audio teleconferencing for instruction. George Avgerakis of Avekta Productions describes how Sandoz Pharmaceuticals has used the very cost effective method of audio teleconferencing combined with a videotape sent to sites in advance to conduct seminars for more than 6,000 doctors and other medical professionals in 280 hospitals.

Jim Ratcliff, professor of higher education at Iowa State University, addresses the overall strengths and weaknesses of audio conferencing for colleges and universities. Ratcliff discusses effective planning of audio conferences, and points out the ability of this technology to bring people together wherever they might be. By overcoming costly constraints of travel and lodging, audio conferences are frequently meetings that otherwise would not have taken place.

As you know, the Center sponsored a series of audio workshops earlier this year. Your enthusiasm for those workshops made them a big success. We are planning to introduce other audio workshops this fall and will let you know as soon as those have been selected. Let me also point out that this issue of *TELESCAN* brings you some excellent resources in the audio teleconferencing area. You can particularly note Jim Ratcliff's article in the *AAHE Bulletin*, as well as the tele-training study coming out of North Carolina. (Both are under Audioscan)

Let me also remind you that our *Telecourse Inventory, 1984*, will be coming out this summer. Only a limited supply will be available, so send in your order on the form on page 11 to reserve your copy.

Also coming this summer . . . in an effort to build upon your good responses to our readership survey, we are planning to convert *TELESCAN* to a monthly publication. Current subscribers, will, of course, continue to receive a full year's subscription. You will also have the opportunity to renew for another year of *TELESCAN*—to receive *10* issues rather than six—at *current subscription rates*. This incredible value will be made available only to our present subscribers. More information will be coming to you shortly.

Keep your letters, questions, and comments coming in.

Marilyn Kressel

Marilyn Kressel
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Periodicals

*The periodicals cited in this issue of **TELESCAN** cover the period from January 16 to March 15, 1984. A list of the periodicals regularly reviewed for **TELESCAN** is available to subscribers on request. Below are listed periodicals reviewed especially for this issue of **TELESCAN**.*

Regional Spotlight
Southern Association of Higher Education

Journal of Optometric Education
Association of Schools and
Colleges of Optometry

Computer/Law Journal
Center for Computer Law

NFCB Newsletter
National Federation of Community
Broadcasters

CTIC Reports
Cable Television Information Center

Audio Conference Planning

continued from page 1

from the idea of an interactive video conference. Sandoz resorted to the audio conference with companion prerecorded videotapes as a more logistically and financially realistic alternative; audio conferences were not originally chosen as the primary delivery system and therefore did not serve as a conceptual framework for planning the seminars. Not surprising, then, is a focus in Mr. Avgerakis' article upon the expedient and fiscally prudent qualities of two-way the audio conferences supplemented with prerecorded videotapes.

Unfortunately, we have few positive examples of audio conferences that were planned for their intrinsic educational value, rather than their ease in production, transmission, and their relative low cost. Audio conferences do have positive characteristics that separate them from video telecommunications programs. And Mr. Avgerakis' article illustrates several of those positive characteristics.

First, audio conferences are less place bound. Unlike interactive video programs, audio conferences are not dependent upon the learners being present in a television studio or a specially designed interactive video conference room. In the past 12 months, I have been involved in audio conferences where presenters have participated from their hotel room, their home, their office, a college seminar room, a meeting room at a major national conference, and even a pay phone booth!

Audio conferences are extremely flexible forms of telecommunications programming. To access the Sandoz seminars, a hospital would need a videotape player and a conference telephone set—two pieces of equipment frequently found in both offices and homes.

Audio conferences are a far more personal form of communication. Since we cannot see the other people in an audio conference, it is natural to assume that audio conferences are impersonal. However, we have been acculturated to expect personal and confidential conversations over the telephone. We are accustomed to whispering sweet nothings to our spouses and lovers over the telephone, but we would not necessarily be comfortable doing the same thing out loud in a crowded room of people. Likewise, when a doctor in the Sandoz audio seminars asked a question, he or she no doubt experienced the sensation of speaking on a one-to-one basis with the presenter, even though that doctor may be only one among 6,000 involved in program! Carefully planned audio con-

ferences can be highly interactive and highly personal forms of group learning.

Another important feature of the audio conferences is illustrated by the Sandoz seminars: they are meetings that otherwise would not have taken place. As forms of communication, the Sandoz seminars are not replacing face-to-face meetings of doctors and hospital staff. Rather, they are creating new, easily accessible, and cost-effective forms of communication and learning that add to the menu of available continuing education for doctors and hospital staff.

There are other educational benefits to the approach outlined by Mr. Avgerakis that also deserve mention. The idea of mixing media wherever possible in telecommunications educational programs is an important one from both a telecommunications and an educational perspective. Research on learning styles and learning preferences indicates that different individuals develop different approaches to perceiving, thinking, and remembering. These differences in learning styles and preferences cause some students to learn better in groups, while others learn better individually. Learning styles and preferences may account for why some students learn better by listening, others by seeing, and still others by touching and manipulating objects.

The audio conference portion of the Sandoz program is an interactive, group learning oriented medium. The videotape portion, in contrast, may be studied by learners individually, on their own time, anytime prior to the audio seminar session. The video portion tends to meet the needs of people who learn by seeing and by people who are independent learners. The audio portion is most appropriate for persons who learn by discussing and who learn in a group-dependent environment.

Print materials, like videotapes, can be used as an effective supplement to an audio conference. Print handouts, mailed in advance to each audio conference location can reinforce further the media mix. Such "advance organizers" as outlines, agendas, bibliographies, and worksheets provide learners with tactile and kinesthetic reinforcement for the learning that is to take place. They provide those learners in the audio conference who learn best by touching, feeling, and doing something to hold, write, or design on while the audio conference is in session. It also provides the independent learners in the group with an avenue for further study and reflection after the audio session has concluded and the videotape player has been turned off.

The Sandoz solution gives further evidence to the need to include a mix of media in any telecommunications programming. Because the primary mode of interaction is to be two-way audio, it is natural for the educational planner to focus on the aural content of the seminar or meeting. However, Avgerakis' idea of forwarding in advance a videotape copy of the didactic portion of the program to each location participating in the seminar is an excellent one. It also capitalizes on the strengths of both video recordings and interactive audio as learning media.

Audio conferences have educational merits discrete from other telecommunications mediums. Recognizing the educational strengths of audio conferencing in meeting distance learning needs can assist telecommunications programmers in designing effective training sessions that utilize the strengths of a variety of instructional media. Through such careful planning, programs can be developed that are not only cost effective, but also address the different ways people perceive, think, remember, and learn.

Information in each section of TELESCAN is categorized using the following symbols:

Articles

Books

Washington-based activities

Programs and projects

AUDIOSCAN

Articles, books, programs, and projects involving the uses of audio technologies.

Audiotape

"Professional Development and Audio-Assisted Independent Study in Mental Health," by Peter Geib and George R. McMeen, *T.H.E. Journal*, March 1984, pp. 106-110.

Audio tapes are proposed as an efficient way to help mental health professionals stay up-to-date. The tapes are especially attractive as a delivery system, say these authors, because they allow for optimal use of personnel.

The three developmental tracks within a staff development system—attainment of individually negotiated career goals, inservice training, and continuing education—are all contingent on appropriate instructional media. As personnel implement these three tracks, which the authors discuss in some detail, they must also build in support services and instructional strategies.

Audio-assisted independent study is shown to be an appropriate strategy for several reasons:

- staff may proceed at their own learning rates;
- staff may learn at their own time and place;
- staff can review content at their own pace; and
- audiocassettes result in cost savings since fewer face-to-face meetings are required.

The authors conclude that the use of audio materials "enhances the various components of a career development and education program aimed toward employee training and the improvement of professional relationships with the community."

Cable Radio

"Service for Blind Expected to Enhance SSS Scan Prospects." *CableAge*, January 23, 1984, p. 42. A description of the Satellite Cable Audio Network, developed by Southern Satellite Systems, which now transmits five audio networks to cable systems via WTBS.

Radio

"At the FCC: FM Landrush; Dereg." *NFCB Newsletter*, March 15, 1984, pp. 3-4. A look at the implications of the large number of new applications for small noncommercial educational FM stations.

"Radio: Subcarriers Revived." *Channels*,

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January/February 1984, p. 20. A report on how NPR members plan to use their subcarrier channels to generate income.

Raley, Nancy. **"A Medley of Radio Winners."** *CASE Currents*, March 1984, pp. 18-23. A roundup of innovative and effective radio programs produced by university public relation offices.

"Wingspread Conference Papers." *Current*, February 28, 1984, pp. 4, 8. A discussion by NPR Board members of the restructuring of NPR.

Teleconferencing

Ratcliff, James. **"Audio Conferencing: An Alternative for Campus Renewal."** *AAHE Bulletin*, March 1984, pp. 11-14. An overview of audio conferencing and its value for disseminating important information without travel costs.

"Teletraining Effective, Less Costly: N.C. Study." *Telecoms*, March 1984, pp. 1-2. A report on a North Carolina state office study showing audio conferencing to be a cost effective training tool.

Purdue Explores Uses Of Speaker Phones

Purdue University recently completed a three-year project studying the efficiency of speaker telephones in continuing education. The project delivered 5,377 live contact hours of instruction to personnel serving the handicapped in 64 Indiana public education programs. Eighty-seven percent of the participants agreed that speaker phone continuing education was excellent. Cost analysis revealed that speaker telephones saved 55% over travel costs associated with face-to-face instruction.

For further information contact Robert Showalter, Purdue University, Department of Audiology and Speech, Heavlon Hall, West Lafayette, IN 47907; 317/494-3785.

Telephone

Danna, Sammy R. **"SUVON AND ICON—Indiana's Phone Nets."** February 1984, pp. 40-43. A description to two telephone networks serving and saving Indiana universities over regular WATS lines.

VIDEOSCAN

Articles, books, programs, and projects involving the uses of video technologies.

Broadcast Television

"Time to Get Off the Shelf: Educational Television and Public Libraries in Continuing Education." by K. S. Atkins, *Journal of Educational Television*, Vol. 10, No. 1, 1984, pp. 19-23.

A joint BBC Educational Broadcasting Services and Cheshire Libraries project was begun in 1981 to encourage the process of linking educational broadcasting, public libraries, and the community.

The purpose was to see how the library could help develop interest in adult education, operate as a multi-media resource center and source of followup material for the public, and examine its staff attitudes toward public broadcasting.

All of the Cheshire public libraries mounted a public relations campaign to promote continuing education and responded to a questionnaire about their facilities, equipment, and activities. Eight libraries were selected for more intensive study.

The project resulted in four general findings for librarians and broadcasters:

1. It is possible to increase library staff awareness of broadcasting and to stimulate both interest and activities. This could be extended to a national scale.
2. Librarians did not see a significant role for themselves as developers of interest in adult education agencies.
3. Even though library equipment is currently limited, computerization of libraries can help stimulate involvement with educational software development.
4. The development of a BBC education leaflet dispenser for public libraries was seen as a welcome step in providing a central information point.

"Advertising on Public Broadcasting Debated Before Senate Panel." *Broadcasting*, February 27, 1984, pp. 67-68. An overview of the Senate hearings on enhanced underwriting on public radio and TV.

"Appeals Court Agrees with FCC: Broadcasters May Sponsor Debates." *Broadcasting*, March 12, 1984, p. 69. A report on the Appeals Court ruling to allow broadcasters to sponsor as well as cover political debates.

Cooke, Wilhelmina. **"Less is More; The Proposed Repeal of the Rule of 7's."** *Access*, February 1984, pp. 1, 5. A commentary addressing the dangers of the FCC's plan to repeal the "seven station rule."

Danoff, Leslie. **"Major Rulemaking Underway."** *LPTV Currents*, January/February 1984, pp. 2, 14. An update on the FCC's consideration of changes in processing LPTV applications.

"FCC Cutoff List to Speed LPTV License Grants." *Electronic Media*, March 8, 1984, p. 17. A look at the February 28th lottery winners—19 in all.

Gelman, Morrie. **"TV Stations Playing New Game with Schools."** *Electronic Media*, February 9, 1984, p. 16. A profile on KING-TV in Seattle, Wash., and its TV news game that allows students to test their knowledge of current events.

Lachenbruch, David. **"Stereophonic TV: You Haven't Heard the Half of It."** *Channels*, January/February 1984, p. 18. A discussion of multi-channel TV sound: its capabilities and projected use in the U.S.

"NAB Gives up on Wirth, Puts Hope in Dingell." *Broadcasting*, March 12, 1984, pp. 31-32. An update on the status of the draft broadcast deregulation bill and a listing of its key provisions.

"National Narrowcast Service OK'd." *Current*, January 17, 1984, pp. 1, 6. A report on an FCC ruling that will allow PBS to construct a new network of ITFS stations to be called the National Narrowcast Service.

"PBS: The Other Network." *Broadcasting*, February 20, 1984, p. 66. A discussion of public television's upward growth by PBS affiliate executives at the National Association of Television Producers and Entertainers conference.

Cable Television

Bedford, Chris. **"Labor Using TV for Positive Change."** *Community Television Review*, Winter 1984, pp. 8-10. A report on "Inside Your Schools," a series produced by the American Federation of Teachers for local cable channels.

Brotman, Stuart and Larrry Levine. **"Public Institutional Cable Networks."** *Telecommunications*, February 1984, pp. 102-103. A look at four institutional networks currently operating on cable systems and Boston's plan for their PIN.

Capuzzi, Cecilia. **"A & E: Culture on Cable."** *CableVision*, March 12, 1984, pp. 39, 42-44. A profile of the lone surviving satellite arts network, Arts and Entertainment.

"Corporations on Cable." *E&ITV*, February 1984, pp. 53-54. A description of "How's Business," an experimental documentary series produced by American Express for distribution on cable.

Dingell, John. **"A Cable Bill Must Serve the Public."** *Access*, February 1984, p. 7. A commentary on the cable deregulation bill by the chair of the House committee where the bill currently lies.

"Distant-Signal Bills Come Under Fire." *Broadcasting*, February 27, 1984, pp. 62-63. A report on the move against two bills in Congress that would permit cable systems to import additional broadcast signals without payment.

Dunn, Joseph. **"Renegotiating Franchise Terms Latest Urban Sport."** *CableVision*, February 20, 1984, pp. 6-7, 10-11. A look at current cable company efforts to change their franchise agreements in urban areas.

Gladstone, Brooke. **"NCTA White Paper Urges Bill Passage."** *Broadcasting*, February 13, 1984, p. 15. A report on National Cable TV's fight to pass H.R. 4103.

Lavers, Daphne. **"Can 'Big Brother' Be Kept at Bay?"** *Cable Communications Magazine*, March 1984, pp. 18-22. A discussion of subscriber privacy in two-way cable systems.

McCron, R. **"New Technologies—New Opportunities? The Potential of Cable in Educational and Social Action Broadcasting."** *Journal of Educational Television*, January 1984, pp. 7-18. An examination of the potential of cable TV in the United Kingdom.

Rosenthal, Edmond. **"Princeton System Applies Restrained State-of-the-Art."** *CableAge*, March 5, 1984, pp. 23-24. A profile of the Princeton, N.J. cable franchise currently being built.

Suchors, Cheryl. **"Cable & Coops Were Made for Each Other."** *Access*, January 1984, pp. 5, 2. A discussion of cooperative ownership of cable systems, the advantages, and possible financing.

"Wirth Offers Franchise Fee Measure." *Broadcasting*, February 20, 1984, p. 33. A look at a proposed bill that would cap franchise fee collection at 4% and require a 25% setaside for local origination.

Institutional Networks: Using Cable for Data, Voice and Video Communications by Sylvia Hack. Media Enterprises [112 East 19th St., New York, NY 10003] 1984. 150 pp. An explanation of the status and technology of institutional networks. This book explores the INET in the competitive market, profiles selected operators, and discusses its economics and its future.

CEN Develops Co-op To Assist Educational Cable Channels

The Central Educational Network is developing a College Cable Co-op to pool and acquire programming to fill local cable educational channels. Over the next year CEN will provide co-op members with 13-week, four-hour-a-week program packages at low cost. In addition, co-op members can contribute their own programs to the pool. For further information, contact Carol Koffarnus, Postsecondary Education, CEN, 4300 W. Peterson Ave., Chicago, IL 60646; 312/545-7500.

Satellites

"Bad Week for Birds." *Broadcasting*, February 13, 1984, pp. 164-65. An evaluation of the loss of Westar VI and Palapa-B2 and the effect on the progress of satellite communications.

"Campus Network Starts Broadcasting, Looks For Ku-Band Capacity." *DBS News*, February 1984, p. 1. An announcement of 12 colleges that have signed up to receive a nationwide college network offering free informational programming.

"College Sports NET Launched." *CableVision*, February 13, 1984, p. 13. A report on College Sports Network now providing major NCAA coverage to 60 cable systems (about 2 million homes).

"Comsat Underwrites Fellowship Programs at Two Universities." *ETV Newsletter*, Feburary 6, 1984, pp. 3-4. An announcement of COMSAT's plans to establish fellowship programs for graduate study in telecommunications and electronics.

"Doubts Over DBS Regulation." *Broadcasting*, February 27, 1984, p. 37-38. U.S. Court of Appeals questions the FCC's authorization of DBS service.

Marantz, Charles. **"Finding the Dollars to Finance DBS."** *Broadcasting*, January 16, 1984, p. 34. A discussion of project financing methods for new communications ventures, including questions potential investors might ask.

Quillian, Terrel. **"Skylink."** *Satellite Communications*, March 1984, pp. 26, 28. A profile of a mobile satellite network tailored to fit the needs of rural/remote areas.

Rosenthal, Edmond. **"DBS Terrestrial Business Will Have Variety of Players."** *CableAge*, February 6, 1984, pp. 9-10, 12. An overview of the different companies involved in delivering DBS services, from manufacturers to program suppliers.

"Sorting-out the DBS Proposals." *Broadcasting*, January 16, 1984, p. 48. A description of companies approved to offer direct-to-home television service, with a question about how many will last.

"USCI's Indiana Launch Shows a Lackluster Response to DBS." *Electronic Media*, January 19, 1984, pp. 13, 16. A look at the low-power DBS system two months after its launch.

Wold, Robert. **"Satellite Service in the Wake of Bell Breakup."** *Broadcasting*, January 16, 1984, pp. 118-19. An assessment of how Wold Communications will realign its operations in the satellite communications market.

The 1984 Satellite Directory. Phillips Publishing [7315 Wisconsin Ave., Suite 1200N, Bethesda, MD 20814.] 1984. 900 pp. paperback $197. A listing of more than 15,000 entities involved in satellite communications: manufacturers and distributors of hardware, carrier and systems operators, programming services, consultants, and associations.

NEA Establishes Satellite Network

EdNet, the National Education Association's satellite television network, telecasts a weekly program of education news to 11 of NEA's state affiliates. Every Monday at 2 p.m. NEA's production studio broadcasis live with reports on the progress of educational programs, legislative updates, and organizational business.

The EdNet system was developed by

NEA to enhance internal communications in a cost-effective manner. Programming is sent via the Private Satellite Network which is responsible for satellite linkage. NEA plans to expand its coverage to 21 states in the near future.

On February 4, NEA conducted a legislative teleconference through EdNet shown in all 50 states. The teleconference provided a live call-in format on current educational legislation.

For further information concerning EdNet contact Fran Grasso, NEA, 1201 16th St. NW, Washington, DC 20036; 202/822-7212.

Teleconferencing

"ALI-ABA Launches 1984 Series; FEMA Programs." *Public Service Satellite Consortium Newsletter*, February 1984, p. 2. A report on two teleconference series for professional training.

"Campus of the Future a First at Pittsburgh." *Telecoms*, February 1984, p. 5. A review of University of Pittsburgh plans to build a fiber optic system on campus for videoconferencing.

"Intelsat Hit on 2 Fronts; More Competition Urged." *Telecoms*, February 1984, pp. 1-2. A report on filings by two corporations for international videoconferencing.

Milliot, Jim. **"Videoconferencing Expanding at J.C. Penney, Citibank."** *Video User*, February 1984, p. 16. A look at two corporate plans for videoconferencing in 1984.

Reilly, Claire. **"Telecommunications: New Wave Networks."** *Audio-Visual Communications*, February 1984, pp. 18-19, 55. An overview of business, medical, and university use of teleconferencing including the National Telecom Network, and the Campus Conference Network.

"SatServ Signs First CCN Contracts." *Public Service Satellite Consortium Newsletter*, March 1984, p. 1. An announcement of 16 colleges and universities that have joined the Campus Conference Network.

Weiss, Alan Jay. **"The Long-Distance Meeting."** *Training News*, February 1984, p. 11. An examination of the value of teleconferencing for corporate professionals.

Videodisc

Glenn, Jan. **"Videodisc Pre-mastering."** *Audio-Visual Communications*, March 1984, pp. 45-46. A guide to pre-mastering videodisc programs on ¾-inch videotape to cut the costs of one-inch computerized system.

Hartigan, John. **"Digitized Audio for Disc Still-Frames."** *E&ITV*, February 1984. An explanation of Sony's procedure for recording audio information on redundant still-frame disc displays.

Videocassette and Videodisc Hardware and Software Markets. International Resource Development, Inc. [30 High St., Norwalk, CT 06851; 203/866-6914]. 167 pp. November 1983. $1,285. Examines the present and evolving relationship between the consumer VCR and videodisc systems, including the preferred status of the VCR and the upcoming era of the interactive videodisc player. Includes detailed vendor profiles and 10-year forecasts.

Survey Reports on Videodisc Use by School Systems

A survey commissioned by the Great Plains National TV Library shows that nearly 20% of U.S. school systems, K-12 and colleges, currently own and operate videodisc playback equipment.

The greatest usage was reported at the junior and senior high levels. Science, social studies, English, and math are the subjects most often taught with videodiscs.

Of the 300 audiovisual service directors interviewed for the survey, 25% indicated their school systems anticipated purchasing videodisc players within the next two and one-half years. The major purpose for this purchase was for use in teaching college-level science subjects.

For further information or a copy of the survey write: Videodisc Survey, Box 80669, Lincoln, NE 68501.

Videodiscs Shown Effective Means of Distributing Programs

A study by the Maryland Center for Public Broadcasting, the first station to originate broadcasts from videodisc, suggests that videodiscs are an effective means of broadcasting and distributing instructional programs.

Pioneer LaserDisc players were used to receive programs at 15 sites in the U.S. and Korea. Each site had been supplied with a player by the International University Consortium. Enthusiastic responses came from participants at the University of Maryland University College, Pennsylvania State University, and Hampton Institute.

For a copy of the "Videodisc Feasibility Study," contact Ralph France, Maryland Center for Public Broadcasting, 11767 Bonita Ave., Owings Mills, MD 21117.

Army Moves to Videodisc

More than 7,000 Army training programs currently on videocassette may appear in optical videodisc format. The Army's Training Extension Courses will become part of a new system called the Electronic Information Delivery Systems.

Videotape

Hosie, P. J. **"So You Want to Make A Television Programme?"** *Journal of Educational Television*, January 1984, pp. 39-42. An outline of practical procedures to ensure that educational programs reach their fruition.

Joyce, William. **"Grading Student Video Productions."** *E&ITV*, February 1984, pp. 55-56, 58. A discussion of grading techniques and their value in evaluating video productions.

"New Videotapes on Current Vocational Education Issues Announced." *Centergram*, February 1984, p. 1. An announcement of videotapes available through the National Center for Research in Vocational Education.

Smith, Jeanne. **"An Evaluation of Telecourse Achievement at Saddleback College."** *T.H.E. Journal*, February 1984, pp. 94-96. A report of a comparison study of learning in a telecourse and a parallel on-campus course, showing no difference in achievement.

Videotext/Teletext

Bradbury, John. **"Learn Alaska by Teletext."** *Telecommunications*, March 1984, pp. 86-89. An explanation of the State of Alaska's Learn Alaska project.

"CBS, IBM, Sears to Make Stab at Videotext." *Broadcasting*, February 20, 1984, p. 81. An announcement of a part-

nership venture to develop a videotext service for computer households.

"Canada Awards CBC $6 Million to Continue Teletext Development." *ETV Newsletter*, March 19, 1984, p. 3. A look at Canada's development of a national teletext service.

Coates, Colby. **"CBS to Use Dual-Mode Captioning."** *Electronic Media*, March 15, 1984, pp. 4, 27. A report on CBS's decision to use teletext as one option of its closed captioning.

"Joint Venture Will Provide Teletext Service During Summer Olympics." *Broadcasting*, January 30, 1984, pp. 72-73. A report on several equipment makers (BBC, Metromedia, Taft, Ameritext) who will provide reports on games and traffic information via Los Angeles KTTV-TV.

Smith, Desmond. **"Veterans Look at Videotext Journalism."** *Electronic Media*, February 2, 1984, p. 37. A discussion of videotext journalism, its content and diversity.

"Teletext Debuts in Asia." *Video User*, March 1984, p. 8. A report on SBC Text, a government-owned teletext service operating in Singapore.

"Videotex/Teletext Bibliography. Videotex Industry Association [1901 N. Fort Myer Drive, #200, Rosslyn, VA 22209; 703/522-0883]. December 1983. 74 pp. $25. An extensive bibliography lists books, reports, and articles on videotext and teletext.

Report Provides Worldwide Census of Teletext, Videotext

The British Department of Trade and Industry recently released a study providing a definitive count of installed videotext and teletext user terminals around the world during April and May 1983.

The study identified 169 operational videotext/teletext services in 24 countries encompassing 2.3 million user terminals.

Almost 98% of the terminals are in commerical use—the remainder being involved in technical and market trials. Britain has by far the highest number of terminal users.

More than ten different kinds of facilities were identified as being provided on the videotext, teletext services. Information retrieval is offered on 97% of all services, messaging on 69%, and games on 35%.

COMPUSCAN

Articles, books, programs, and projects involving the uses of computer technologies.

Computers

"Educational Productivity, the Teacher and Technology," by Arthur S. Melmed, *T.H.E. Journal*, March 1984, pp. 78-82.

Computer literacy is an "urgent need" that has become a "metaphor for American economic success," suggests this author. He outlines two scenarios that support the notion of expanded school use of computers to stimulate student learning in various curriculum areas.

The first scenario sets the stage with facts and figures regarding hardware and software. Since computer use is doubling annually, by 1988 more than 1.2 million computer units will be installed in schools. Between $12 million and $25 million is being spent annually on educational software. Since an average student will require 720 hours of instructional software during 12 years of schooling, there is obviously a lot at stake economically. By 1985 schools must increase their hardware expenditures to about $500 million.

A different scenario is also described that focuses on the long-term use of higher cost computers to improve teacher productivity by increasing class size. Some of this "productivity gain" could then be used for higher teacher salaries. This scenario is dependent upon the use of "intelligent computer tutors," which individualize instruction. More sophisticated software is needed for this approach which may in turn necessitate expensive replacement of existing computer hardware—leading to an annual replacement cost for both hardware and software of $4.6 billion.

Implementation of the second scenario, the author proposes, could result in a net savings of $4.5 billion, due to savings in increased student-teacher ratios. The savings could be applied to teather salaries, averaging an annual increase of $2,500 per teacher.

"CAI System: Present and Future," by Israel Pressman and Bruce Rosenbloom, *T.H.E. Journal*, March 1984, pp. 94-98.

As computer-assisted instruction (CAI) has developed since the 1950s, cost has been a consistent hindrance to its widespread use. However, costs have recently come down, and CAI is more attractive. This article takes a realistic look at what today's costs are.

Costs for CAI must be examined part by part: hardware, software, user training, maintenance, and installation.

Hardware costs have dropped dramatically since the advent of today's inexpensive microcomputers. Whereas an early system could cost $10,000 per terminal, in addition to high monthly usage fees, today's micro can range from $500 to $3,000.

CAI software, or courseware, is more sophisticated than the early "electronic page turners." Current courseware allows for testing, drill and practice, tutorials, dialogs (unstructured "conversations" between student and computer), and simulation. The significant growth in CAI courseware development was a natural outgrowth of hardware cost reductions.

Training costs still pose problems and will vary. There is also a question about who should bear the cost—the user, distributor, or the manufacturer. Many alternatives need to be explored.

Installation and maintenance costs also vary, and involve consideration of peripherals like printers, disk drives, and monitors.

Total CAI system costs are illustrated for a moderately priced, simple network consisting of 15 micros and one master controller suitable for a school with 750 to 1,000 students. Spreading costs over a CAI system can average $1.32 per student hour.

Backler, Martin. **"Reviews."** *Performance & Instructional Journal*, February 1984, pp. 7-8. A review of five computer dictionaries: their usefulness and accuracy.

Bork, Alfred. **"Two Examples of Computer-based Learning on Personal Computers."** *AEDS Journal*, Fall/Winter 1983, pp. 49-53. Two profiles of computer-based learning projects: one concerned with scientific literacy and the other with improving reasoning skills.

Chin, Kathy. **"Preschool Computing: Too Much, Too Soon?"** *InfoWorld*, February 20, 1984, pp. 24-27. An examination of the value in preschool computer instruction.

"Colleges Join Forces to Develop Software." *InfoWorld*, January 16, 1984, p. 37. A consortium of 15 colleges and universities has been formed by Carnegie-Mellon University to produce computer programs useful in higher education.

"Computers in Education: Implications for Schools and Colleges." *Regional Spotlight*, January 1984, pp. 1-12. An overview of the many questions facing higher education in meeting the challenges of the new information age.

Goddard, William and Lionel Pereira-Mendoza. **"Three Perspectives for Computer Applications in Education."** *AEDS Journal*, Spring 1984, pp. 14-19. A compilation of three independent studies of educators' perspectives on computing.

Fisher, Glenn. **"The Social Effects of Computers in Education."** *Electronic Learning*, March 1984, pp. 26-27. A look at current research into the effects of computers on student behavior and attitudes.

Foulkes, Fred and Jeffrey Hirsch. **"People Make Robots Work."** *Harvard Business Review*, January-February 1984, pp. 94-102. An in-depth report on introducing robots into the workplace.

Hinze, Kenneth. **"Using a Population Simulation in College Courses."** *Collegiate Microcomputer*, February 1984, pp. 61-63. A paper describing the instructional use of a microcomputer version of the WORLD2 global population-ecology simulation.

Larson, William. **"Applying High Technology in Teaching Laboratories."** *Journal of Optometric Education*, Winter 1984, pp. 17-19. A discussion of automation in teaching laboratories.

Lee, Chris. **"Training the Hewlett-Packard Team."** *Training*, March 1984, pp. 24-27, 31. A profile of the computer company Hewlett-Packard, and its training techniques.

Manock, John J. and Roger H. Lumb. **"Offering an Inservice Instructional Program Using a Computer-Based Communication System."** *T.H.E. Journal*, February 1984, pp. 84-87. A description of a West Carolina University joint biology-chemistry pilot inservice course for regional high school science teachers.

March, George and Tom Spain. **"Robots in the Classroom."** *Electronic Learning*, March 1984, pp. 48-53, 112. A report on educational uses of robots and a profile of four schools currently using them.

"Marketing Analysis and Software Licensing Restrictions: An Important Relationship." *The Scott Report*, February 1984, pp. 1-7. An explanation of the software licensing process and factors that affect restrictions.

McCain, Nina. **"Big Jump in Computer-Related Majors Worries MIT."** *Chronicle of Higher Education*, March 7, 1984, p. 3. A report on how the dramatic increase in computer science majors is draining department resources.

"Micro-computer Learning Center Handles Training for Retailers." *Computer & Software News*, February 27, 1984, p. 2. A report on a training center in Chicago's financial district that teaches the stock market community about computers.

"Money for Micros, 1984/85." *Electronic Learning*, March 1984, pp. 39-41, 44-46. A guide to funding for educational computing that lists public funding sources, appropriation bills, and regional foundations.

Peters, Dustin. **"This Microcomputer Committee Works."** *Electronic Education*, March 1984, pp. 16, 18. A description of one committee setting up to explore computer use in their school.

Roblyer, M. D. **"Toward More Effective Microcomputer Courseware Through Application of Systematic Instructional Design Methods."** *AEDS Journal*, Fall/Winter 1983, pp. 23-31. An explanation of a method for courseware design that would eliminate courseware problems and limitations.

Stone, Antonia. **"When Atari Plugs into the Ghetto."** *Advertising Age*, January 30, 1984, p. 20. A commentary on the problem of access to computers for the poor.

Spain, Tom. **"A School That Markets Its Own Resources."** *Electronic Learning*, March 1984, pp. 32, 34. A report on education and business forming a partnership to obtain computer funding in Rochester, N.Y.

Spuck, Dennis and Gene Atkinson. **"Administrative Uses of the Microcomputer."** *AEDS Journal*, Fall/Winter 1983, pp. 83-89. A review of the state of microcomputer use in university administrations.

Sturdivant, Patricia. **"Courseware for Schools: Present and Future Needs."** *Monitor*, January/February 1984, pp. 25-27. An examination of the emerging role of technology in education and the need for an educational software consortium.

Turner, Judith. **"Retailers Protest Computer Makers' Deals with Colleges."** *Chronicle of Higher Education*, February 15, 1984, p. 11. A report on campus-bookstore managers' problem in matching university discounts on computers.

"University of Massachusetts Produces Three New Computer Language Short Courses." *Monitor*, January 1984, pp. 1, 4. An announcement of three courses composed of short videocassettes and manuals on computer language.

VanHouweling, Douglas. **"Information Processing Futures for Higher Education."** *EDUCOM*, Fall/Winter 1983, pp. 35-40. A discussion of the Carnegie-Mellon University response to the information technology scene.

Wolff, Michael. **"Dealing with Alternatives to Buying Computer Power."** *Computer & Software News*, March 12, 1984, p. 20. A view of factors to compare in-house computing with time-sharing or other alternatives.

AECT Offers TechNet—Network for Educational Software, Mail

The Association for Educational Communications and Technology (AECT) is now offering a 24-hour electronic network called TechNet. This network provides electronic mail services and access to the ED-LINE network, as well as a choice of CompuServe or the Source.

TechNet grew out of BEST Net, the electronic mail service that linked the state education agencies participating in AECT's Project BEST. It is an expanded version of this network that is now available to all interested individuals and organizations.

TechNet offers subscribers an electronic bulletin board listing timely news and information about developments in instructional technology, evaluation and reviews of educational software and programs, plus networking through electronic mail. For further information contact AECT, 1126 16th St. NW, Washington, DC 20036; 202/466-4780.

Interactive Video

"That Tiny Blip Is . . . LaserSoft." *Electronic Education*, February 1984, pp. 16-7. A description of a new videodisc system called LaserSoft Learning System.

"The State of Interactive Video 1984." *Video User*, March 1984, pp. 1, 21. A series of articles discussing the growth of videodisc and its corporate use.

MACROSCAN

Articles, books, programs, and projects involving the uses of combined technologies.

"The NABU Network Launch—An Idea Whose Time Has Come?" by Daphne Lavers, *Cable Communications Magazine*, January 1984, pp. 14-18.

The NABU Network Corporation of Ottawa has launched the first microcomputer network service to deliver computer programs and games to home television sets by coaxial cable. The October 1983 premier utilized Ottawa Cablevision Limited as the retailer and magician Doug Henning as the spokesperson.

To access specific tiers of programming, network subscribers simply press the appropriate button on their home computers. Currently available are a "family" tier package that includes learning programs, word games, etc; an "educational" tier that uses the Logo computer language to teach computer programming basics; and an "entertainment" tier that features arcade-quality video games.

The NABU Network advantage is that subscribers don't have to purchase expensive programs for their home computers. Since it is a one-way system, it also is advantageous to the cable operator, who does not have to upgrade to two-way capability. The absence of direct user access insures complete subscriber privacy.

The home link component, the NABU Personal Computer, features 64K graphics RAM, and accepts a variety of optional peripheral devices. It consists of a processing unit, a keyboard, and detachable games controllers.

Andrews, Larry. **"Evaluating Educational Technology: The Law and Hammer."** *Change*, March/April 1984, pp. 5-6. An opinion piece on the dangers of overusing technology in education.

Berkman, Dave. **"Coming to Terms with Deregulation."** *Access*, January 1984, p. 1. A discussion of the impact of federal deregulation on all forms of telecommunications.

Evanow, Peter. **"Brain Stretching."** *Cablevision*, February 1984, pp. 32, 36-37. A report on "the Mind Extension Channel," which delivers computer software to cable subscribers.

Greenhouse, Michael. **"Getting Graphic with Industry."** *Videography*, February 1984, pp. 26-28, 30. A description of a company that develops computer graphics for corporate videotape productions.

"Product Directory/Buyers' Guide Covering Cable Television, Broadcasting, Telecommunications." *Cable Communications Magazine*, March 1984, pp. 24-31. An index to suppliers of telecommunications products.

"Reagan Budget: Mixed Bag for Communications." *Broadcasting*, February 6, 1984, pp. 54, 56. A report on the FCC budget for 1985—public broadcasting does not fare well, USIA's radio and TV services receive substantial boost.

"Why People are Turned Off by Television." *U.S. News & World Report*, February 13, 1984, pp. 49-50. An analysis of the recent drop in television viewership (broadcast and cable viewer disenchantment).

The Expanding Roles of Telecommunications in Higher Education, edited by Pamela Tate and Marilyn Kressel, *New Directions for Higher Education, No. 44*, [Jossey-Bass, Dept. 62425, P.O. Box 6200, San Francisco, CA 94162]. 1984. 115 pp. $8.95 paperback. A sourcebook that explores the increasing use of telecommunications in higher education by looking at administrative and policy issues.

International Telecommunications and Information Policy, edited by Christopher Sterling. Communications Press [1346 Connecticut Ave. NW, Washington, DC 20036]. 1984. 496 pp. $39.50 paperback. An examination of the developments, trends, and issues surrounding international telecommunications. Included is a reprint of the National Telecommunications and Information Administration's paper: "Long Range Goals in International Telecommunications and Information: An Outline for United States Policy." Plus presentations from the May 1983 symposium on International Policy held by the Center for Telecommunications Studies of George Washington University.

MACROSCAN

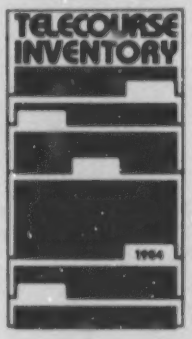
Annenberg/CPB Project Releases Guidelines For 1984 Proposals

The Annenberg/CPB Project, supporting projects that use telecommunications technologies to enhance the quality and availability of higher education, has issued guidelines for this year's proposals. Last year, the Project supported efforts exploring new applications of telecommunications technologies, including broadcast television and radio, videodisc, electronic text, and computers.

This year the Project is placing emphasis on the substance of the subject being taught, in particular proposals that:

1. Hold the promise of significant impact on higher education;
2. Involve key personnel with experience appropriate to a project;
3. Further its goals by demonstrating telecommunications applications in higher eduction and/or developing collections of outstanding college-level materials.

To obtain a copy of the proposal guidelines write Annenberg/CPB Project, 1111 16th St. NW, Washington, DC 20036; 202/955-5251.



From the Center for Learning and Telecommunications . . .

A new sourcebook to be published this summer provides descriptions of more than 130 telecourses—both video and audio—produced for higher education. Listings include information on the level, content, format, ancillary materials, and availability of the courses.

Telecourse Inventory, 1984, is detailed, up-to-date, and invaluable.

Price is just $20, from the Center for Learning and Telecommunications. Add $2 postage for orders outside the U.S. To order, check the box on the form appearing on page 11, or send your check or purchase order to the Center at One Dupont Circle, Suite 600, Washington, DC 20036.

Conference With Audio But Send Video Ahead

continued from page 1

largest, fixed budgetary item was the cost of that satellite transmission coupled with the rental of receiving systems. Since del Vecchio's main objective was to produce a teleconference with both audio and visual elements, Sandoz thoroughly investigated alternatives to satellite transmission.

It was decided that the teleconference should consist of a carefully assembled telephone network that would be set up between the seminar leader and a number of professionals, using standard telephone amplifiers at each site. Instead of using satellite transmission for the video signal, the video portion would be produced ahead of time, in a format similar to that of an educational documentary, and distributed prior to the seminar date. A pamphlet or other document could accompany the videotape.

Not only does this type of teleconference have obvious financial benefits, it also assures participants a quality video signal. This assurance simply does not exist in satellite teleconferencing because of the enormous complexity of transmitting signals in and out of space. Some of the problems encountered include possible loss of chrominance or total loss of the picture for a portion of the teleconference. The sound and picture may also lose sync if the signal does not bounce properly.

"We call our method, 'Two-Way Audio, Pre-Recorded Video' teleconferencing," says del Vecchio, "and we start planning three months in advance." Although this type of teleconferencing may not meet all one's needs, it does provide significant cost reductions when the video portion of a conference need not be live.

Eliminating transceiving costs and the problems associated with satellite video signal delivery obviously is advantageous and reduces one's budget considerably. But there are also a number of additional, possibly intangible, savings one should consider, e.g., the number of hours employees can devote to work instead of traveling to and from transceiving sites, or the various advantages of providing participants an in-house teleconference location.

The audio element

Originally, Dr. del Vecchio, with the help of Dr. Loren Parker at the University of Wisconsin, built his own telephone network. On other occasions, he rented phone bridging setups from such phone conferencing services as Connex in Connecticut. Either way, setting up a telephone network is a big job. Since the telephone will be the only source of communication between conference sites, careful planning and coordination are essential.

A first step is to develop a list of potential participating locations and to review them to assess the type of phone equipment that will be available for conference use. Then, designate a central phone coordinator to provide and ensure the proper organization and use of all telephone equipment. Many times a participating site will have everything needed for the conference—a speakerphone, a video playback machine, a monitor, and, most importantly, a telephone line which will remain undisturbed for the duration of the conference. In most cases, however, a participating facility must rent special telephone lines and hardware, and arrange to have equipment shipped to the site, assembled, and tested before the conference begins. A central phone coordinator then proves invaluable.

Del Vecchio found that, because of his conference format, i.e., a conference between one expert and hundreds of participants waiting to ask questions, it was also best to designate a site monitor at each location to act as a spokesperson for the participants at that location. The group selects several questions to ask the expert, but the site monitor is the only one to speak on-line on behalf of the group. Del Vecchio's teleconferences have used a rotational sequence for the questions and answers, with each location allotted two or more questions per rotation. "Using site monitors helped us control the length and direction of our conference, and also kept small talk to a minimum," he said.

Planning the video

Since the audio is the only live portion of the teleconference, proper planning and production of the prerecorded videotape is essential to conference success. Thorough research and planning of the theme and content of the teleconference will provide the basis for a video presentation that is current, relative, and stimulating to the audience.

Once the production of the tape is completed, Sandoz makes duplicates and distributes them, matching the tape format to the particular playback system of each participating site. Participants are cued to start their playbacks during the conferences, therefore the video presentations at all sites are more or less in sync.

Video: a case study

In one of a series of planned conferences in which our company participated, Sandoz arranged for the services of one of the world's foremost authorities on the psychiatric pathology of the aged, Dr. Eric Pfeiffer. Dr. Pfeiffer, who is the director of the Suncoast Gerontology Center in Tampa, Florida, was the designated host for the teleconference entitled "Understanding and Coping with Dementia."

Initial, preproduction interviews with Dr. Pfeiffer led to the conclusion that the topic of dementia would require three separate conferences, each dealing with a different area of concern for the treatment of a patient's family as well as the patient. After numerous meetings, careful outlines were established for each conference. The first conference, which we will examine, would explore the discovery and diagnosis of dementia in a patient who complained of mild memory loss or some other early symptom of Altzheimer's Disease (the specific term for this kind of dementia).

The teleconference phone hookup enabled Dr. Pfeiffer to open his course by welcoming all the participants in a warm, friendly manner, much as one would talk with an associate on the phone. After an initial greeting to his more than 1,000 listeners, Dr. Pfeiffer directed all participants to begin playing their videotapes, explaining that they were about to see a prerecorded video demonstration entitled "Introduction to our work and mission at Suncoast Gerontology."

Part one of the course required stopping and starting the videotape three separate times. This was done both through on-screen text instructions and direct cues from Dr. Pfeiffer. The visual instructions naturally had to remain on screen long enough to compensate for playbacks that were ten or more seconds out of sync.

The first videotape segment showed participants several of Dr. Pfeiffer's actual patients, people in various stages of a withering brain disease that eventually leads to helplessness and institutionalization. This portion of the tape was carefully edited to allow the participating physicians to recognize various levels of the disease in patients in their own practices. When Dr. Pfeiffer rejoined his audi-

ence live, the stage was set for a discussion of the methods of clinical diagnosis, Dr. Pfeiffer's second topic of discussion.

In each phase of the teleconference, Sandoz identified and met the needs of the audience members as carefully as possible according to the guidelines established months earlier in pre-production. This specificity was enhanced by the most important part of any teleconference, the question-and-answer period, which should make up approximately 30% of the total conference time.

Since part one of "Understanding Dementia" involved training doctors to recognize the various behavioral symptoms of those who suffer from the disease, Sandoz decided the best use of the video time lay in presenting a patient who had dementia, along with his family, who were therapeutically providing care and love. With the assistance of Dr. Pfeiffer and his staff, the production crew entered the homes and lives of many Altzheimer patients and their family caregivers. The video presented other scenes also considered valuable, showing members of the featured patient's family interacting with the families of other patients, discussing and sharing the terrifying effects of such an insidious disease.

Making video work

How much your conference will look and feel like an actual satellite teleconference depends mostly on how spontaneous and relevant the video portion of the program is to the audience, and on the live exchange of ideas. Since you must produce the videotape months before the actual conference, careful attention and planning must go into the agenda of each conference.

The desired end result in any teleconference is the interactive involvement of your audience. What this kind of teleconference lacks in video spontaneity therefore must be made up in careful anticipation of your audience's needs. Such a project presents a challenge that goes beyond that posed by a strictly linear video program. Here your audience *expects* to interact and so a producer's responsibility is greater since he/she must not fail his audience's enhanced expectations.

Define the objectives of the video. What does the audience need to be told? Think through the effect you want the audience to experience. Should the videotape educate, motivate, or sell? What should the audience remember once the teleconference is over? The answers to these questions will provide a clear set of goals in planning the video as well as in planning the promotion of the event.

Identify your production needs. Once you have defined the purpose and subject of the teleconference, pre-production planning should evaluate the best technique to present the material and "delight" the audience. One technique for pre-production planning involves interviewing your subjects on ¼" audiotape weeks before the actual video shoot. These interviews are then transcribed and edited into a tight-ratio shooting script. Later, in the editing process, the audiotapes provide additional sources for voice-overs.

In some way or another, we are all assaulted by stimuli through the television medium. The success of any video must capture, in part, the intellect, the imagination and the hearts of your audience. One cannot leave such a task to chance. For example, the dementia series had to show families under great stress. In such situations, the added tension of being "on television" can ruin all spontaneity. The subjects should not be confronted with prolonged equipment setups that will add to the strain.

For example, quick lighting that captures the feel of a dramatic film is invaluable in such productions. Most of the teleconferences recently produced for Sandoz have been shot by Avekta Productions' Edward Pei, who brought his experience in lighting such TV films as *Svengali* to the industrial medium.

Be creative from within. Although all video productions strive to be entertaining, the 'content,' not the 'packaging,' is the keystone. Therefore, try to identify and build upon the creative qualities within the material itself. A producer must always be wary of the barrage of over-blown, highly visual effects often seen in industrial productions. Try to exploit the existing and unique qualities of

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your subject before exercising computer graphics and elaborate visual designs to unfettered limits.

Promote your conference

Once you have completed the logistics and assembled the physical elements of a teleconference, one of the most important factors in its success is that people actually see it. Teleconferences are exciting events, but one can't rely on word-of-mouth alone to fill the theaters. Advertise!

Tell prospective guests that they can participate in the comfort of their own offices if they like. Send brochures with R.S.V.P.s. Engage the interest of the staff members at each location and ask them to post notices and talk about the event to their associates.

Recently Sandoz created an "Afternoon in Vienna" teleconference for the Seventh World Conference of Psychiatry in Vienna, Austria. This conference required satellite-transmitted audio to bring live discussions of medical professionals into hundreds of American hospitals. The event was held after months of planning and preparation.

To enhance the promotion of the event, Dr. del Vecchio and Sandoz Pharmaceuticals provided Viennese food catering services at each participating facility to help "transport" each hospital's staff to Vienna and facilitate the "feel" of being there. As del Vecchio humorously noted, "We were helping them to attend the conference in a style to which they can't afford to grow accustomed."

Teleconferencing is a powerful communication tool—powerful and expensive. Some day it will become a tool that will be easily accessible to all. Until then, we are sure that this new and simplified version of the teleconference will be applied in many new areas, where it will prove practical and effective.

Contributors

The efforts of these individuals have been critical to our monitoring activities for this issue of ***TELESCAN****. We urge those of you who wish to become part of this important network to submit to* ***TELESCAN*** *items of potential interest to our broadly based audience.*

Lynn Barnett
ERIC Clearinghouse on Higher Education
Peter Dirr
Corporation for Public Broadcasting
Carol Koffarnus
Central Educational Network
Charlotte Marson
Publications Consultant
Robert Showalter
Purdue University

AAHE
AMERICAN ASSOCIATION
FOR HIGHER EDUCATION
ONE DUPONT CIRCLE, SUITE 600
WASHINGTON, D.C. 20036

Center for Learning and Telecommunications
One Dupont Circle, Suite 600
Washington, DC 20036
202/293-6440

The Center for Learning and Telecommunications was established in 1980 under a grant from the Carnegie Corporation to provide the postsecondary community with objective information on the use of telecommunication technologies in delivering instruction. The Center publishes *TELESCAN* on a bimonthly basis to assist academic decision makers in discovering the programs, projects, research, and other initiatives that effectively utilize technology in postsecondary settings.

Marilyn Kressel, *Director*
Joan Gudgel, *Communications Manager*
Linda Pratt, *Secretary*

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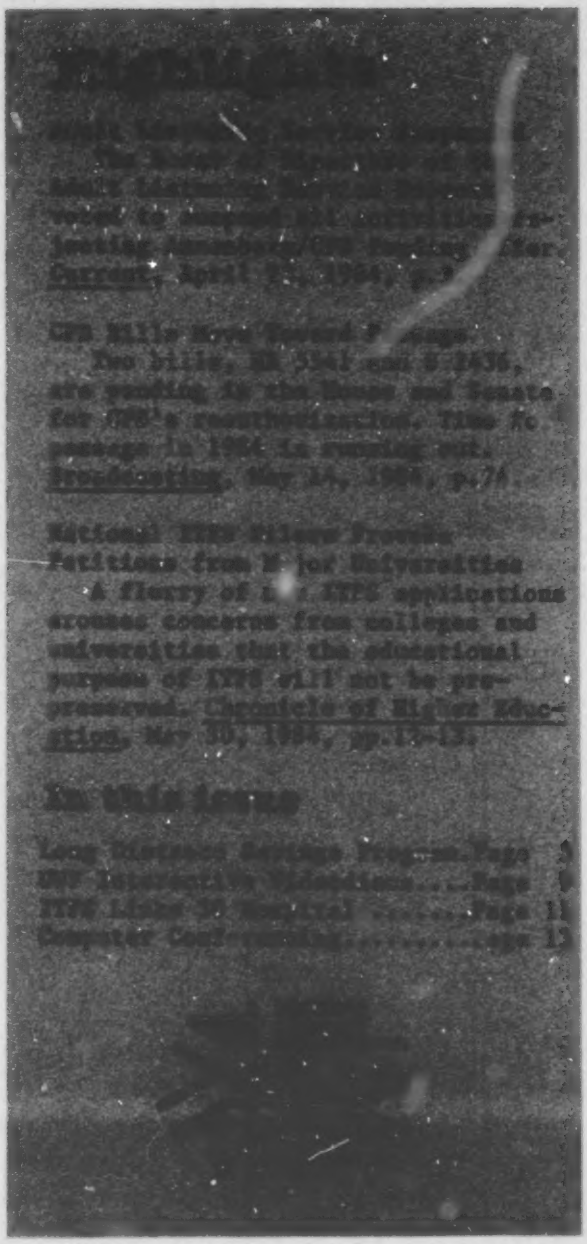
TELESCAN

JULY 1984

The Digest of the Center for Learning and Telecommunications VOLUME 3 ISSUE 6



Legislative Update

Computers
by Art Sheekey, AAHE Senior Associate

During the 98th Congress dozens of bills authorizing support for educational technology were introduced by both Democrats and Republicans. These bills exceeded in numbers and scope by the legislative proposals that responded to the broader science, engineering and technology issues. Nevertheless,the time and attention several Congressional Committess gave to the opportunities for computer-assistd education was impressive. Authorization for appropriations for the technology bills ranged from $4 million to over $2 billion per year. Despite the long debates, committee hearings and reports, no new authorizing legislation is expected from the 98th Congress. The Administration lacks interest in any such federal expansion and the budget deficit acts as a real constraint.

In addition to the science and mathematics improvement bills, three computer education bills were among the more seriously considered. These were: 1. HR 1134 (Downey, D-NY) would provide one or more National Centers for Personal Computers in Education, $4 million for fiscal year 1984 to remain available until September 30, 1986; 2. HR 4628 (Gore, D-TN) would establish a National Educational Software Corporation, an independent entity with an authorization for fiscal years 1985, 1986, and 1987 of $15 million annually; 3. HR 3750 (Wirth, D-CO) provides an

Continued on page 3

SCAN

Dear Subscriber,

Let me introduce you to the new, monthly Telescan. Based on the results of our readership survey earlier this year, we will now be publishing Telescan ten times annually. Telescan remains your hotline to the most current literature and recent developments in the postsecondary/telecommunications field. Our new, increased publication timetable now brings you a 75% increase in the amount of information you'll receive.

We are also responding to your request for a greater emphasis on technology-based progams and projects. We've augmented our program descriptions and are now featuring them at the beginning of each section. Every description provides a contact person that will help you follow up the programs you want to know more about.

Legislative Update will now be a regular feature of Telescan, this section will keep you up-to-date on the changing status of telecommunications regulation. And is it ever changing, Congress and the FCC are currently considering issues that will have a direct effect on the postsecondary community's involvement in telecommunications, see pages 1 and 2 for information on computer legislation.

In an effort to make Telescan more useful as a reference tool, we have included an index to the periodicals listed in each issue. Hopefully, this new section will allow you to easily locate any article cited in Telescan, see page 16.

The new, monthly format reflects our continuing efforts to tailor Telescan to your needs. We hope we've succeeded. Please let us know your reactions, comments and suggestions by writing to us at the Center for Learning and Telecommunications, One Dupont Circle, Washington, DC 20036.

Sincerely,

Marilyn Kressel

Marilyn Kressel
Director
Center for Learning and
Telecommunications

Continued from page 1

annual authorization of $320 million each for of the next 10 years.

The bill sponsored by Congressman Wirth and 40 additional colleagues provides assistance to local schools and institutions of higher education to acquire computer hardware, conduct short-term institutes for teachers supporting grants and contracts for research, experimentation and dissemination. While no such bills will likely become Acts, both the Department of Education and NSF claim to have funds to carry out many of the activities described in the various pieces of proposed legislation.

Other Computer Bills

- o HR 881 authorizes a National Program of Improving the Quality of Education.
- o HR 2531 would provide a tax credit against income tax for computers designed for educational and professional uses.
- o HR 4245 would establish a National Professions and Technology Foundation Act.
- o HR 4259 would fund a computer security research program and credit against income tax for computers purchased for educational and profesional uses.
- o S 874 would provide a national program to improve mathematics and science education.
- o S 1194 would amend the tax code to encourage contributions of scientific equipment to schools and colleges, and to foster university research and scientific training.
- o S 1849 would provide financial aid to states for improving computer assisted education in schools
- o S2532 would improve more equitable uses of computers.

Legislation that would make unauthrized computer intrusions illegal under federal law was voted out of the House Crime Subcommittee. HR 5616 is scheduled to be voted on in the House Judiciary Committee June 1st. The American Council for Education (ACE) sent a letter to the Subcommittee supporting the bill on behalf of 12 higher education associations. In the letter Sheldon E. Steinbach, ACE General Counsel wrote, "This presents a significant step forward in dealing with the growing amount of crime associated with computers. Unauthorized borrowing of materials contained in computer systems is not a sport, it is piracy and should be dealt with as such.

Computer crime is currently not punishable under federal law, 23 states

Continued on page 4

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Marilyn Kressel, Director
Joan Gudgel, Communications Manager
Linda Pratt, Secretary

Continued from page 3
have penalities for computer intruders. Contact: Sue Fratkin, National Association of State Land Grant Colleges and Universities, 202/293-7120.

Broadcasting

The FCC approved "enhanced underwriting" for Public Broadcasting TV and radio stations. Donor acknowledgements may now include: a logo or slogan that identifies but does not promote, locations, descriptions of a product line or service, or trade names that aid in identifying the the donor.

The FCC also prohibited public broadcasters from engaging in fund raising activities that suspend or alter regular programming on behalf of any entity other than the station itself. Contact: Lane Howard Moten, FCC, 202/632-7792.

Instructional Television Fixed Service

The FCC defined "substantial" usage of the ITFS spectrum for educational purposes at 3 hours a day from 8 am to 10 pm Monday through Friday for the duration of the school year or a variation that equals 15 hours a week. The rest of the time may be leased to commercial programmers.

The FCC denied petitions to reconsider its reallocation of the E & F bands of ITFS from educational to MDS interests. When these channels were reallocated in May 1983, existing licenses and applications were grandfathered. Commissioners say this grandfathering will not extend beyond the original applicant which poses a problem for the PBS National Narrowcast System. PBS had intended to turn over the licenses it was granted last December to local stations. Contact: Susan Fratkin, National Association of State Universities and Land Grant Colleges, 202/293-7120.

Cable Television

The National Cable Television Association and the National League of Cities/Conference of Mayors have reached an agreement and sent their recommendations on national cable regulation to the House Committee on Energy & Commerce where the cable bill HR 4103 is now resting. It is anticipated that the comprimise will clear the way for enactment of the first-ever federal legislation for cable TV. According to the agreement, educational access channels can be established and enforced at the local government level. The cost of providing access facilities, equipment, and channel capacity will not be considered franchise fee payments. Contact: Sue Buske, National Federation of Local Cable Programmers, 202/544-7272.

Radio

In a "landrush" atmosphere of filings, a large share of remaining noncommercial allocations of FM are being filed for by "one or two" applicants. House Subcommittee Chairman Tim Wirth (D-CO) asked the FCC to forward details on the applicants and on what the Commission intends to do with them. Contact: Pat Watkins, National Federation of Community Broadcasters, 202/797-3700.

Teletext

The FCC authorized television stations to offer teletext, but refused to select a technical standard or to give teletext must-carry status on cable TV.

So the battle goes on between the World System Teletext and North American Broadcast Teletext Specification to become the standard operating systems for teletext in the U.S.

AUDIOSCAN

Articles, books, programs, and projects involving the uses of audio technologies.

Telephone

Programs

Cooperative Cuts Long Distance Bills

The Telecommunications Cooperative Network provides 400 nonprofit groups with assistance in lowering the high cost of phone service through the Long Distance Savings Program. Some organizations have been saving up to 15% more than other nonprofits using MCI, Sprint, and other commercial discount services.

The Network's program identifies the most cost-effective long distance services available to an organization, taking into account geographic location, time of distribution, length of calls, and volume of calls. Costs are also reduced by the program's special volume discounts which allow members to receive lower rates through the larger volume of usage as a cooperative. Since the Network operates on a not-for-profit basis, members can receive annual "dividends", a share of the net income of the service.

Future plans include a switchboard that will automatically route individual calls through the most economical service.

The annual fee for membership amounts to 15% of the average monthly phone bill for an organization.

Contact: June Balin, Telecommunications Cooperative Network, 212/689-1321.

Articles

"The Impact of Access Charges on Large Users," Telephone Angles, April 1984, p.1-2. A report on the FCC's plan to charge distance carriers access fees to the local phone system forcing telecommunication managers to reassess their long distance costs.

Kraemer, Joseph. "Bypass of the Local Exchange: Myths and Realities," Business Communications Review, May/June 1984, pp.4-9. An explanation of "bypass" and the extent of its use.

"Letting Loose Some Monsters," Time, April 23, 1984, p.66-67. An overview of problems produced by the breakup of AT&T.

"The Scramble to Break Up AT&T's Last Monopoly," Business Week, May 21, 1984, p.112. A discussion of AT&T's 800 service and how MCI is attempting to break this last monopoly.

Books

The Long-Distance Telephone Sourcebook. Phillips Publishing, Suite 1200N, 7315 Wisconsin Avenue, Bethesda, MD 20814. 1984, 250 pp. prepublication $97.00.

A directory of facts, figures and new ideas to guide one through alternative long-distance telephone providers - 145 major suppliers are listed.

Radio

Articles

"NPR Back on Firmer Ground", Broadcasting, April 16, 1984, pp.91-92. A look at National Public Radio's conference and brighter financial forecast for 1984.

"Mississippi Public Radio Network on the Air," Current, May 8, 1984, p.3. An announcement of seven new public radio stations going on air.

VIDEOSCAN

Articles, books, programs, and projects involving the uses of video technologies.

Broadcast Television

Programs

Network Northeastern Provides ITFS Continuing Education Courses

By the 1984-85 school year, Northeastern University of Boston will be transmitting 80 live, interactive courses via their ITFS system. These courses are sent 9 am to 5 pm, Monday through Friday to nine area electronic and electrical companies at 13 sites in Massachusetts and New Hampshire.

The engineering technology courses are taught by faculty from Northeastern's Lincoln College, a college within the larger College of Engineering that specializes in engineering programs that are applied or technological in nature.

The courses are geared primarily to graduate level engineering professionals, but undergraduate and noncredit courses are also available.

Network Northeastern consists of four ITFS channels which provide one-way video and two-way audio transmissions allowing students in remote locations to communicate with the professors at the Boston campus.

Contact: Arthur Lendo, ITFS, 617/437-4777.

Five North Carolina Campuses Unite Via Microwave

By 1985, five North Carolina campuses, will be linked by a sophisicated communications system using two-way video, audio, and data paths for video conference, teleclasses and data transmission. Institutions participating in the project are Duke University, University of North Carolina at Chapel Hill, North Carolina State, University of North Carolina at Charlotte, North Carolina A&T State University, and Research Triangle Institute.

Currently, a prototype link connects Duke and UNC-Chapel Hill to carry high speed data between the two campuses. Microelectronic courses also broadcast between the two schools. Nine courses were exchanged last year with a total of 289 students enrolled. Spring teleclasses were two-way video transmissions.

Microelectronics Center of North Carolina (MCNC), a nonprofit corporation, operates the prototype communications system. It provided $400,000 for construction while Duke and UNC-Chapel Hill renovated their facilities. Part of the monies needed to complete the entire 152-mile system was appropriated by the North Carolina General Assembly. MCNC is launching a campaign to seek further funding.

Contact: Carol Brown Eilber, MCNC, 919/248-1837.

Articles

Danna, Sammy. "Lifetime Education for Engineers By Purdue," E&ITV, May, 1984, pp.100-105. A description of Indiana Higher Education Telecommunications System, a statewide ITFS network.

"How The FCC's Paperwork May Delay Deregulation," Business Week, May 7, 1984, pp.147-150. A report on the bureaucracy of the FCC application process and how it slows the progress of regulation.

"LPTV Growing Pains," Broadcasting, May

7, 1984, pp.109-110. An overview of a low power panel at the National Association of Broadcasters'convention.

"National ITFS Network Planned," Broadcasting, May 14, 1984, p.82. A report on National Conference on Citizenship's recent filing of 87 low power TV applications.

"The Cookie Monster Comes to Reno," E&ITV, April 1984, pp. 37-39. A profile of KNPB-TV, a PBS station that recently went on air in Nevada.

Cable Television

Articles

"FCC Authorizes Trans-Atlantic Fiber Optic Cable," Broadcasting, May 28, 1984, p.40. A report on TAT-8, the cable that will allow digital communications between the U.S., England, and France.

Hack, Sylvia. "Costs and Benefits of Institutional Cable Networks", Business Communications Review, May/June 1984, pp.12-15. An explanation of I-NETs and their current use and benefits.

"Holding Action," Channels, May/June 1984, p.9. A look at the Foundation for Community Service Cable Television, an organization attempting to support community access in California.

"NYC Public TV Goes LO", CableVision, May 28, 1984, p.26. A description of WNYC's move into local cable programming.

"Pro Ed Net Set To Launch In September," CableVision, May 21, 1984, p.13. An announcement of the launch of Professional Education Network, a pay TV service targeted to lawyers, accountants, and other businesspeople.

7, 1984, p.60. A discussion of the competition between cable and home recorders for movie viewers.

Summervile, Russ, and Krakora, Nancy. "Notre Dame's TV Station Sports Fiber-Optic Campus-Studio Link," Communications News, April 1984, p.84. A look at the communications configurations that allow Notre Dame to send out clean coverage of its football games.

Books

Cable for Information Delivery. Knowledge Industry Publications, 701 Westchester Ave., White Plains, NY 10604. 1984. 172 pp. $34.50 hard cover, $27.50 paperback.

A guide to the different technical opportunities cable affords librarians, educators and cable professionals.

Satellites

Articles

"CPB Approves PBS Purchase of Satellite Transponders," ETV Newsletter, April 16, 1984, p.3. An announcement of PBS's deal with Western Union to purchase six transponders.

Dunn, Donald. "Dish Antenna Prices Come Down Out Of The Sky," Business Week, April 30, 1984, p. 129-130. An explanation of common earth dishes-cost, availability, and how they work.

Gladstone, Brooke. "Committees Reviewing Dish Bills," CableVision, April 16, 1984, p.48. An update on two bills in Congress that define the rights of dish owners.

Lavers, Daphne. "DBS: What's Happening in Canada," Cable Communications, April 1984, pp.12-17. A look at Canada's policy/strategy on entering the DBS age.

Goldberg, Mortimer. "Satellites For Broadcast," Satellite Communications, April 1984, pp.28-29. A discussion of CBS Radio and how satellites have changed its operation.

Books

1984 Executive DBS Analysis
Institute for Graphic Communication, 375 Commonwealth Avenue, Boston, MA 02115. 1984. 500 pp.

A study on Direct Broadcast Satellite Systems covering market projections, current plans, technology, regulatory, and financial issues.

Teleconferencing

Articles

Bretz, Randall. "Satellite Teleconferencing in Continuing Education," Continuing Higher Education, Spring 1984, pp.14-16. An overview of teleconferencing for continuing education including information on the National University Teleconference Network.

"Eastern Montana College Gets Out of Teleconferencing; Cites Cost, Reliability Issues," Telecoms, May 1984, p.15. An announcement of Billings, Mont. college dismantling their teleconferencing system.

Johansen, Robert, and Bullen, Christine. "What to expect from teleconferencing," Harvard Business Review, March/April 1984, pp.164-174. An exploration of current and future use of teleconferencing.

Kavenik, Frank. "Designing a Successful Videoconference Network," Satellite Communications, May 1984, pp.26-28. A how-to piece on developing a private videoconference network.

Spiller, Rex. "Full Motion Video Tele-Conferencing: How and When To Use a New Technology," T.H.E. Journal, April 1984, pp.86-88. An overview of full motion video teleconferencing.

"Two-Way Teaching In Ohio," E&ITV, May, 1984, pp.12. A short piece on telecourses at Ohio University.

Widner, Doug. "Biznet: An Approach That Works," Satellite Communications, May 1984, pp.33-34. A description of the U.S. Chamber of Commerce's videoconferencing network.

Books

Teleconferencing: A Guide for Associations
American Society of Association Executives, 1575 Eye Street NW, Washington, DC 20005. 1983. 63 pp. $35.

An in-depth study of a teleconferenced event held by the International Association of Business Communicators and nine summaries from other associations covering their experiences.

Videotape

Articles

"CBS Unit Gives Grants For Telecourse Use," Multichannel News, April 30, 1984, p.45. An announcement of six colleges receiving grants from CBS Educational Professional Publishing for telecourses.

Kaminski, Edmund, and Miller, Gerald. "How Jurors Respond to Videotaped Witnesses," Journal of Communications, Winter 1984, pp.88-102. An examination of the effects of close-up, medium, and long shots on how jurors perceive witnesses.

"Notes on Radio & TV," Chronicle of Higher Education, May 9, 1984, p.3. A report on Columbia University's plan to produce a 10-part series on the Soviet Union for public television.

Books

Video in Higher Education
Ortrun Zuber-Skerritt, Nichols Publishing Co. New York, NY 1984. 297 pp. $13.95.

A series of papers on experiments and case studies examining the uses of video to improve learning, teaching, communication and personal behavior.

Videodisc

Programs

Students Will Tour College Campuses Through Videodisc

Information on college campuses, academic curriculum, financial aid, and other topics will be available on laser disc to more than 600,000 college-bound students by next fall. Info-Disc Corporation of Maryland is sending the disc, College USA, to high schools in nine states and the District of Columbia, free of charge. The firm has ordered over 500 LD-V4000 videodisc players from Pioneer for free loan to those schools.

College USA takes viewers on an audiovisual tour of various colleges with an interactive question and answer session. Response cards are also provided to allow students to contact the participating schools.

Schools and universities pay Info-Disc $2,500 per minute per year to have their recruiting messages on the disc. Currently, the disc tours Penn State, Rider College, Virginia Military Institute, and Purdue University.

Contact: Bob Whitaker, Info-Disc, 301/948-2300.

Articles

Gupta, Udayan. "University Study Discovers New Instructional Uses for Videodiscs," Electronic Media, May 3, 1984, p.13,17. A report on the International University Consortium study that reveals new applications for instructional videodiscs.

Heiss, Michael. "Guide to Videodisc Players," Videography, April 1984, pp.69-74. A comparison of available discs and what they have to offer.

Mareth, Paul. "The Video Disc Shining in a New Light," Channels, March/April 1984, pp.24-30. An overview of the state-of-the-art in videodiscs.

"RCA Rivals Still See Life in Videodiscs," Business Week, April 23, 1984, pp.88-89. An analysis of RCA's discontinuation of the SelectaVision videodisc player and its effect on the videodisc industry.

Silverstein, Jeffrey, and Media, Fusion. "Ten Strategic Commandments for Videodisc," The Videodisc Monitor, May 1984, pp.12-13. A ten-point list advising the novice videodisc developer.

Thorkildsen, Ron, and Friedman, Susan. "Videodisks in the Classroom," T.H.E. Journal, April 1984, pp.90-95. A look at Utah State University's development and field test of six instructional videodiscs.

"Touch-Screen Disc," E&ITV, May 1984, p.44-46. An interview with the maker of an interactive medical disc that is touch sensitive.

Books

The Videodisc Book.
John Wiley & Sons, One Wiley Drive, Somerset, NJ 08873. 1984. 480 pp. $75.

A guide to over 1500 videodisc titles, plus individuals and organizations experienced in production, and more than 100 companies offering videodisc related hardware and software.

Videotex/Teletext

Articles

Nugent, Gwen, and Peters, P.J. "How To Become An IP For Educational Videotex," E&ITV, April 1984, pp.45-47. Advice on becoming an information provider for an educational videotex system.

Russell, Sally. "Off and Running," CableVision, April 23, 1984, pp.30-34. An overview of existing videotex services.

Stoller, David. "Text Services Hanging on Despite Live Competition," CableAge, May 14, 1984. pp.6-8. An overview of current teletext services.

"Teletext take its first steps," Broadcasting, May 7, 1984, p.104. A look at teletext's future since the entrance of CBS and NBC into the field.

Crain, Rance. "Videotex: 2-way Ticket Nowhere," Advertising Age, May 10, 1984, p.M-10. A commentary questioning the future of videotex services.

Dawson, Fred. "Videotex fever: Will it Spread ?," CableVision, April 23, 1984, pp.23-40. A report on Bell companies' involvement in videotex.

"High-priced Decoders Stall Teletext," Advertising Age, April 30, 1984, p.56. A report on teletext from the Videotex '84 conference - high costs and threat of regulation slowing progress.

Mach, Tom. "Videotex Testers Compete for Share of Future Shopping Action," Advertising Age, April 16, 1984, pp. M60-62. An explanation of two videotex services on Compuserv and Viewtron.

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MACROSCAN

Articles, books, programs, and projects involving the uses of combined technologies.

Programs

Videoconference Network Links Kansas City Hospitals

Kansas City Area Hospital Association has been using the local cable I-NET to link 12 health care facilities since 1982. As a 42-member association KCAHA has plans to include more of its institutions into the videoconferencing network. By Fall 1984, KCAHA hopes to expand its network with an ITFS system to serve 30 members and use the cable I-NET as a backup system where programming can also be originated and distributed.

The network reaches hospital administrators, physicians, department managers, technical, and professional staffs with weekly and monthly videoconferences of one-way video and two-way audio transmissions over phone lines.

In addition to videoconferences, the system will provide the satellite service Cable Health Network, live broadcasts of weekly medical rounds from two member hospitals, and prerecorded tapes on management development and health care issues.

Member hospitals pay KCAHA $500 to $4,000 a year depending upon their annual budget to be hooked up to the network.

Future plans include development of credit and noncredit courses for hospital employees and computer-assisted instruction that can be accessed by all hospitals through the I-NET.

Contact: Nancy Dumoff, KCAHA, 816/531-5969.

Articles

"ACTV Unveils Interactive Television," Broadcasting, May 28, 1984, p.69. A description of a new computer-driven one-way interactive television system designed for use on a cable system.

Bartimo, Jim. "Micros Get Videotex Support," InfoWorld, May 14, 1984, p.11. An announcement by Wang and Digital Equipment of new software that enables a personal computer to be used as a videotex terminal.

Buske, Sue Miller. "Local and Institutional Networks in Perspective," Video Manager, April 1984, p.18. An explanation of the differences between local area networks and cable institutional networks.

"Hybrid System Integrates Sound and Moving Images of Video Discs Into Videotex System," Communications News, May 1984, p.135. A report on Media Videotex's new hybrid system which intermixes videotex and video information on a single laser videodisc.

McVoy, D. Stevens. "Cable's Local Loop Potential," Cable Communications Magazine , May 1984, p.80. A discussion of MCI's move to use cable lines for the local loop of their long distance network.

"NAB '84: The Year of the Computer," Broadcasting, May 14, 1984, p.46. A look at the National Association of Broadcaster's convention and the most common type of equipment exhibited, the computer.

Scanlon, Robert,and Patterson, John. "Temple University and a Telecommunication Procurement Program," T.H.E Journal April 1984, p.79-81. An overview of Temple's procurement plan for a telecommunications system supporting voice, data, and video applications.

Schumuckler, Eric. "The War of the

Wires," Channels, May/June 1984, p.36-39. A commentary on moves by the cable and phone industries to enter each other's fields.

Watt, Peggy. "FCC Stems Interference," InfoWorld, May 28, 1984, p.55-60. A report on the regulations attempting to control interference between TV sets and computers.

Zemke, Ron. "Teacher On A Tape:'Audio-tutorials' for Computer Literacy," Training, April 1984, p.73-78. A discussion of audiocassette use to teach hands-on computer programming.

Books

1984 Directory of Resources for Technology in Education.
Far West Laboratory, 1855 Folsom Street, San Francisco, CA 94103. 1984. 243 pp. $12.95 paperback, $19.95 hardcover.

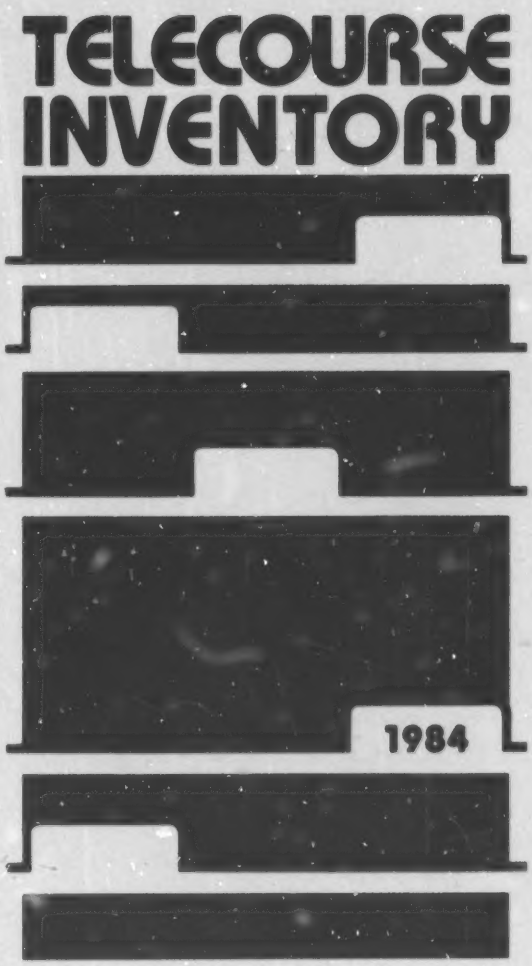
A directory of information about national and state associations, resource organizations, computer camps, databases, electronic bulletin boards, degree programs, and funding sources.

Telecommunications Technologies and Public Broadcasting.
Corporation for Public Broadcasting, 1111 16th Street NW, Washington, DC. 20036. 78 pp. $5.

A guide to alternative technologies for Public Broadcasting. It covers high definition TV, audio and video teleconferencing, electronic text, and specialized cable services.

Telecourse Inventory, 1984.
Center for Learning and Telecommunications, One Dupont Circle, Suite 600, Washington, DC 20036. 1984. 188 pp. $20.

A sourcebook of more than 130 descriptions of telecourses, both audio and video, produced for higher education.



A new sourcebook, Telecourse Inventory, 1984, will be available from the Center for Learning and Telecommunications, August 1984. The inventory provides descriptions of more than 130 telecourses-both video and audio-produced for higher education. Listings include information on the level, content, format, ancillary materials, and availability of the courses.

Telecourse Inventory, 1984 is detailed, up-to-date, and invaluable.

Price is just $20, from the Center Add $1.50 postage for orders outside the U.S. To order, check the box on the form on page 10, or send your check or purchase order to the Center at One Dupont Circle, Suite 600, Washington, DC 20036.

COMPUSCAN

Articles, books, programs, and projects involving the uses of computer technologies.

Computers

Programs

Digital Equipment Chooses Universities for PACE Program

Fourteen universities were chosen to take part in Digital Equipment Corporation's Partners for the Advancement of Computers in Education Program (PACE). Each participating university will acquire up to 100 Digital computers which can be networked to a Digital VAX for development work.

Digital has required the universities to meet on a quarterly basis to exchange information on their projects, in an effort to promote computer use in education.

The universities were chosen for the quality of their proposals, expertise of research staff, and the diversity of the application of personnel computers.

They are: University of Arizona, Case-Western Reserve University, Carnegie-Mellon University, University of Colorado at Boulder, University of Georgia at Athens, Johns Hopkins University, University of Massachuetts at Amhearst, North Carolina State University, University of Pittsburgh, Rice University, University of Southern California, University of Washington at Seattle, and West Virginia University.

Contact: Mary Ann Burek, Digital Corporation, 617/264-1549.

Electronic Information Exchange System Promotes Low Cost Computer Conferencing

More than 2,000 business, education, and research organizations are currently using a computerized conferencing network to exchange information in a timely fashion.

The Electronic Information Exchange System was started in 1977 under a grant from the National Science Foundation and was primarily used by scientists until two years ago when the American Productivity Center used the system to help produce its report to President Reagan. Since then the businesses involved in that project have continued their subscriptions to the network and interest continues to grow.

The system provides unlimited use of the computer network for $75 a month. Organizations wishing to subscribe need only a ASCII computer terminal, modem, and telecommunications package. Currently subcribers must dial into the system through an access code to use the Institute's computer. In the future, the Institute hopes to expand to unlimited use of the system by direct access through personal computers.

Contact: Phyllis Miller, New Jersey Institute of Technology, 201/596-3434.

Articles

"4 Million Students Will Own Microcomputers by 1987, Study Says," Chronicle of Higher Education, May 23, 1984, p. 13. A report on a survey by Talmis, a computer-industry research firm on the ownership of microcomputers.

Beering, Steven. "Supercomputer Issues from a University Perspective," EDUCOM Bulletin, Spring 1984, pp.11-14. A paper based on testimony given to the House of Representatives concerning university access to supercomputers.

Bergheim, Kim. "Law Schools Offer

Computer Classes," InfoWorld, June 4, 1984, p.35. A report on universities' attempts to educate law students in the use of computers.

"A Computer Resource Course for Students -And Teachers," Electronic Learning, May/June 1984, pp.49-50. A profile of Vassar College's computer literacy program.

Davison, Fred. "Computing at the University of Georgia: Critical Success Factors," EDUCOM Bulletin, Spring 1984, pp. 5-10. Suggestions for university administrators who are determining their institution's computer needs.

Dodd, Jane, and Anders, Vicki. "Free Online Searches for Undergraduates," Libra y Hi Tech, Spring 1984, pp.43-49. A report on a research project on the use, costs, and projections of online searches by undergraduates.

Ertel, Monica. "A Small Revolution: Microcomputers in Libraries," Special Libraries, April 1984, pp.95-101. A discussion of the microcomputer technologies currently available to libraries.

Kindel, Stephen, and Benot, Ellen. "Hello Mr. Chip," Forbes, April 23, 1984, pp.132-136. An overview of the introduction of computers into the educational system asking "will computers fix up education?"

Loven, John. "A Reasoned Case for Computer Graphics in Education," Media and Methods, April 1984, pp.9-10, 33. A case for using computer graphics to teach abstract concepts of math.

Thomas, Charles. "Trends in Higher Education Computing," EDUCOM Bulletin, Spring 1984, pp.2-10. A look at computer networks, software, and office automation in higher education.

Turner, Judith Axler. "As Use of Computers Sweeps Campuses Colleges Vie for 'Czars' to Manage Them," Chronicle of Higher Education, May 30, 1984, pp. 1& 14. A report on universities' search for academic candidates with computer expertise.

"U. Of Colorado Finds Equipping an Entire Faculty with Personal Computers More Difficult than Expected," Chronicle of Higher Education, May 2, 1984, pp. 18-19. A description of red tape and difficulties facing U. of Colorado at Boulder when implementing a plan to provide computers for their faculty.

Zemke, Ron. "Evaluating Computer-Assisted Instruction: The Good, The Bad and The Why," Training, May 1984, pp. 22-47. An evaluation of CAI programs--what works and what doesn't work.

Books

The Higher-Education Market: Patterns of Responsibility, Purchasing, and Influence. The Chronicle of Higher Education, 1333 New Hampshire Avenue NW, Washington, DC 20036. 1983. 132 pp. $35.

A study of the college and university market that determines patterns of leadership, job responsibility, and purchasing habits. It includes a large section on computer and software: who purchases them, their reading habits.

The Administrator's Use of Microcomputer Systems. American Association of University Administrators, One Dupont Circle, Washington, DC 20036 1984. 8 pp. $2.

A discussion of the use of microcomputers by college adminstrators to increase productivity.

The Local Area Network Book. E.G. Brooner, Howard, W. Sams & Co., Indianapolis, IN. 1984. 124 pp. $7.95.

This book is arranged as a series of questions about networks including what is a LAN, its concepts, and terminology.

Interactive

Programs

University of West Florida's Interactive Videodiscs Will Train State Employees

Some 500 newly hired employees of Florida Health and Rehabilitative Services will be trained in 1984 through microcomputer-driven videodiscs. The University of West Florida's Office for Interactive Technology and Training has been working since 1981 developing a 160-hour training program consisting of nine videodisc sides, 78 floppy discs, and eight reference manuels. Development costs approached one million dollars, not counting start-up and learning expenses.

Aid to Families with Dependent Children was the first HRS program to implement videodisc training. A training test was conducted in Fort Lauderdale in fall of 1983 to determine the usefulness of the package. The hardware used was the Pioneer PR-7820/3 videodisc player, Apple II+ computer, a Coloney VA-1 interface, and Zenith/Heath monitor. The 13 candidates who completed the test pilot had a positive reaction to the self-paced training. Videodisc use reduced instruction time 25% over classroom instruction, and trainees consistently scored 15 to 25 points higher on the final exam than classroom trainees.

Contact: Patricia Lanett, UWF, 904/474-2000.

Articles

Bergheim, Kim. "Doctors Learn Via Diskette," InfoWorld, May 28, 1984, p.26. A report on a new continuing education program for general-practice physicians now on diskettes.

Gayeski, Diane. "Raising Your Interactive IQ," Audio-Visual Communications, May 1984, pp.B6-7. A explanation of what makes interactive video interactive.

"Interactive Videodisc/Computer Biology Lessons," Video Systems, April 1984, pp. 74-76. A description of two Biology courses available on videodisc.

Reinhold, Fran. "How They're Using Interactive Videodiscs," Electronic Learning, April 1984, pp.56-57. Profiles of three schools & two universities pioneering the use of interactive videodisc in instruction.

Waldman, Helayne. "Interactive Video To Teach Writing," E&ITV, April 1984, pp. 78-80. A description of lessons on videotapes controlled by a computer now used at Indian Valley Colleges in Norato, Cal.

Books

Interactive Video/84.
Applied Video Technology, 5118 Westminster Place, St. Louis, MO 63108. 1984 166 pp. $29.

A resource guide to producers, manufacturers, trade assocations, publications, and research organizations dealing with interactive video.

Contributors

The efforts of these individuals have been critical to the production of the new Telescan. We would like to thank them for their interest and efforts in creating this monthly publication.

Diane Calingo, Graphic Designer
Charlotee Marson, Publications Consultant
Linda Resnik, Public Broadcasting Service
Jann Temple-Hewes, AAHE Publications

INDEX

Advertising Age, Crain Communications, 740 Rush Street, Chicago, IL 60611
Audio-Visual Communications, United Business Publications, Inc., 475 Park Avenue South, New York, NY 10016.
Broadcasting, Broadcasting Publications, 1735 DeSales Street, NW, Washington, DC 20036.
Business Communications Review, BCR Enterprises, Inc., 950 York Road, Hindale, IL 60521.
CableAge, Television Editorial Corporation, 1270 Avenue of the Americas, New York, NY 10020.
Cable Communications, Pryde Publications, 165 Bloor Street, East, Toronto, Ontario, CANADA M4W 1C8.
CableVision, Titsch Communications, 101 Park Avenue, New York, NY 10178.
Channels, Media Commentary Council, Inc., 1515 Broadway, New York, NY 10036.
Chronicle of Higher Education, Chronicle of Higher Education, 1333 New Hampshire Avenue, Washington, DC 20036.
Communications News, Harcourt Brace Jovanich, Inc., 124 First Street, Geneva, IL 60134.
Continuing Higher Education, Association for Continuing Higher Education, University of Tennessee, 451 Communications and Extension Building, Knoxville, TN 37916.
Current, Current Publishing Committee, Box 53358, Washington, DC 20009.
EDUCOM Bulletin, EDUCOM, P.O. Box 364, Princeton, NJ 08540.
E&ITV (Educational and Industrial Television) Charles S. Tepfer Publishing, Inc., 51 Sugar Hollow Road, Danbury, CT 06180.
Electronic Learning, Scholastic, Inc., 50 West 44th Street, New York, NY 10036.
Electronic Media, Crain Communications, 740 Rush Street, Chicago, IL 60611.
ETV Newsletter, Charles S, Tepfer Publishing, Inc., 51 Sugar Hollow Road, Danbury, CT 06180.
Forbes, Forbes, Inc., 60 Fifth Avenue, New York, NY 10020.
Havard Business Review, Havard University, Graduate School of Business Administration, Soldiers Field, Boston, MA 02163.
InfoWorld, Popular Computing, Inc., 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025.
Library Hi Tech, Pierian Press, P.O. Box 1808, Ann Arbor, MI 48106.
Media & Methods, American Society of Educators, 1511 Walnut Street, Philadelphia, PA 19102.
Multichannel News, Fairchild Publishing, 300 South Jackson, Denver, CO 80209.
Satellite Communications, Cardiff Publications, 6430 South Yosemite Street, Englewood, Co 80111.
Special Libraries, Special Libraries Association, 235 Park Avenue, New York, NY 10003.
Telecoms, University of Wisconsin-Extension, Lowell Hall, 610 Langdon Street, Madison, WI 53703.
Telephone Angles Newsletter, P.O. Box 633 West Hartford, CT 06107.
T.H.E. Journal, Information Synergy, Inc., P.O. Box 17239, Irvine, CA 92713.
Time, Time, Inc., 3435 Wilshire Boulevard, Los Angeles, CA 92713.
Training/HRD, Lakewood Publishers, 731 Hennepin Avenue, Minneapolis, MN 55403.
The Videodisc Monitor, Videodisc Services, Inc., Box 6302, Arlington, VA 22006.
Videography, United Business Publications, Inc., 475 Park Avenue, South, New York, NY 10016.
Video Manager, Knowledge Industry Publications, Inc., 701 Westchester Avenue, White Plains, NY 10604.
Video Systems, Intertec Publishing Corporation, 9221 Quivira Road, Overland Park, KS 66212.

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TELESCAN

AUGUST 1984

The Digest of the Center for Learning and Telecommunications VOLUME 3 ISSUE 7

Highlights

PBS CANNOT REALLOCATE ITFS CHANNELS, BUT CAN TRANSFER

On June 5, the FCC ruled that PBS cannot reallocate their E & F channels on the ITFS spectrum to MDS, but did allow PBS to assign those channels to any local member licensee for ITFS use. Current, June 12, 1984, p.1.

SUPREME COURT LIMITS STATES' RIGHTS TO REGULATE CABLE

The Supreme Court favored the FCC ruling prohibiting Oklahoma law that bans liquor ads. Ruling may effect the progress of cable bill HR 4103. Broadcasting, June 25, 1984, p.27.

In this issue

TRAC Launches Long Distance Education Campaign.....PAGE 3
Washburn U Wins Lottery.PAGE 4
University Consortium Explores Videotex.....PAGE 7
University of Michigan Plans Computer Network.....PAGE 10

Legislative Update

by Art Sheekey, AAHE Senior Associate

Congress adjourned for the Democratic Convention on June 29th and will reconvene during the week of July 23rd to address several pending educational authorization and appropriation bills.

First to be considered by the House will be the authorization for the Corporation for Public Broadcasting and the Public Telecommunications Facilities Program, as well as appropriations for the Department of Education.

CPB, which has a current budget of almost $136 million, is anticipating amendments extending its authorization through 1989, with its budget increased to $238 million in 1987. The Facilities Program, which has a current budget of $15 million, is being considered for a budget in excess of $24 million for fiscal year 1985; a House/Senate conference will meet to decide differences.

Among the other important bills to be considered that include authorizations for telecommunications facilities and equipment are the Library Science Bill, along with several bills dealing with cable television, the promotion of educational excellence, and new tax credits to promote corporation contributions. However, considering the fact that the 98th Congress has a little more than 30 working days left in 1984, don't expect too much in the way of federal action and leadership.

Continued on page 2

Continued from page 1

BROADCASTING

The FCC has eliminated requirements that noncommercial broadcasters formally ascertain their communities. It also eliminated required program logs. Noncommercial broadcasters must, however, submit issues/program lists in the public inspection files on a quarterly basis. That list must contain at least 5 to 10 issues that the licensee gave particular attention to over the quarter. Contact: Jonathan David, FCC, 202/632-7792.

CABLE TV

On June 26th, the House Energy and Commerce Committee adopted the cable measure HR 4103. It is currently awaiting scheduling for vote on the House floor. The bill would establish equal employment opportunity standards in the cable industry, require cable systems to set aside channels for lease to "unaffiliated" companies, and permit cable operators to modify facility and equipment requirements through negotiations with the franchise authority.

Last-minute amendments passed by the Committee include:

- o grandfathering the California and Massachusetts rate deregulation laws and New York's public access law;
- o establishing fines of up to $10,000 or prison terms of up to two years for obscene programming;
- o requiring cable operators to provide by "sale or lease" lockboxes that subscribers could use to prevent children from viewing unwanted programs.

While the National Cable Television Association and the National League of Cities/Conference of Mayors had agreed to the provisions of HR 4103 earlier this summer, the cable industry has indicated a reversal of support and is currently reevaluating portions of the bill. Contact: Sue Buske, NFLCP, 202/544-7272.

RADIO

Applications for more than 1,000 FM stations created by the FCC's Docket 80-90 may be open for filing by the end of this year. The FCC has released a list of 684 proposed locations for the stations, most falling in the Southeast portion of the U.S. The Corporation for Public Broadcasting has filed comments concerning the use of the new stations and has urged the FCC to set aside a portion for educational use. Contact: Pat Watkins, NFCB, 202/797-8911.

Center for Learning
and Telecommunications
One Dupont Circle, Suite 600
Washington, DC 20036
202/293-6440

The Center for Learning and Telecommunications was established in 1980 under a grant from the Carnegie Corporation to provide the postsecondary community with objective information on the use of telecommunication technologies in delivering instruction. The Center publishes Telescan on a monthly basis to assist academic decision-makers in discovering the programs, projects, research, and other initatives that effectively utilize technology in postsecondary settings.

Marilyn Kressel, Director
Joan Gudgel, Communications Manager
Linda Pratt, Secretary

AUDIOSCAN

Articles, books, programs, and projects involving the uses of audio technologies.

Telephone

Programs

Consumer Group Launches Telephone Education Campaign

The Telecommunications Research and Action Center (TRAC), a Washington-based public interest organization, has initiated a major public education campaign to aid consumers faced with presubscription choices for long distance services.

Since June 1, AT&T has been issing letters, as required by the divestiture, to notify subscribers of their right to choose a different long distance service without charge.

TRAC is sending a weekly news service to newspapers in areas experiencing presubscription to explain consumer's choices and answer common questions. According to Sam Simon, executive director of TRAC, "There is a tremendous amount of confusion and anxiety among consumers when there really is no need for it. We want to provide consumers with a source of information that they can rely on with certainty in the midst of the flood of ads and promotions from competing long distance companies."

Contact: Sam Simon, TRAC, 202/462-2520.

Articles

"FCC Makes Long Distance Cut and Sets Interim Rate of Return," Communications News, July 1984, p.1. An explanation of the FCC's decision to require AT&T to reduce rates for WATS and MTS services.

"Large Users Feel That Bypass Issues Don't Reflect Reality," Communications News, July 1984, p.30-31B. A discussion of the International Communicators' findings that dispute bypass figures cited by the FCC.

Radio

Articles

"CPB Urges FCC to Reserve FM Channels," Current, May 30, 1984, p.3. A report on CPB's comments to the FCC concerning the new allocation of FM channels and the necessity to set aside some channels for noncommercial use.

"Packwood's FEA Fails First Test," Broadcasting, June 18, 1984, p.32. An update on the Freedom of Expression Act that would have lifted content regulations for radio broadcasters.

"Special Status for Rural Public Radio Stations Is Considered," Current, May 30, 1984, p.1,4. A look at NPR's proposal to allow small rural public radio stations to qualify for NPR programming.

Teleconferencing

Articles

"Teleconferencing Industry Faces Obstacles," Telecommunications Alert, June 1984, pp.8-9. A summary of an article from Datamation citing only 5% of the Fortune 500 companies currently using teleconferencing.

VIDEOSCAN

Articles, books, programs, and projects involving the uses of video technologies.

Broadcast Television

Programs

Washburn University Wins Lottery for Translator CP

After a two-year wait, Washburn University of Topeka was recently granted a construction permit to build a translator in Iola, Kansas. This translator will rebroadcast Washburn's noncommercial educational full power station, KTWA and give Iola its first PBS broadcast service.

KTWU plans to extend PBS service even further with three additional translators serving the communities of Pittsburg, Emporia, and Independence, Kan. The University is awaiting the outcome of future FCC lotteries to see if they will win the right to carry out these plans.

Dale Anderson, general manager of KTWU, said that Washburn received a grant from the National Telecommunications and Information Agency for construction of the translator system, which will cost $71, 000.

Contact: Dale Anderson, KTWU, 913/295-6300.

Community College Connects Its Three Campuses Via Microwave

Cuyahoga Community College (CCC) in Cleveland is now able to offer advance courses to all three of its campuses through a new two-way microwave link. The microwave system currently sends courses from CCC's Metro campus to its Eastern and Western campuses, both 16 miles away. Courses can be originated at any location, however.

Richard Browning, faculty facilitator of the Alternative Instructional Delvery Systems at CCC explains, "This system allows us to offer courses that previously would not receive enough enrollment at one location, but can draw the attendance from all three campuses."

According to Browning, a theater history course will be offered for the first time this fall thanks to the microwave system. Courses on the history of women, aging, and speech pathology will also be offered in the future.

The system is designed for two-way audio and video transmission. An instructor at the Metro campus can view his or her students at distant locations through special monitors, in addition to hearing them through microphones.

CCC also produces telecourses for use outside the college. These courses are sent to seven cable companies in the Cleveland area via WVIZ-TV's ITFS system.

Contact: Richard Browning, CCC, 216/348-4000.

Honeywell Employees Continue Education Via ITFS

Employees of Honeywell, 3M, IBM, and other businesses are going back to school via an ITFS system called UNITE. University/Industry Television for Education, a network of the University of Minnesota beams over 20 courses each semester to participating companies. Courses cover both undergraduate and graduate engineering subjects; recently basic math has been added. A two-way radio hook-up permits the employees to participate in classroom discussions. Homework assignments are picked up by a

special courier service, graded by the professor, and returned to the students.

Last year some 190 Honeywell employees attended courses via the UNITE program. Honeywell employees who earn a grade of "C" or above are reimbursed for tuition costs. The company supports the UNITE program since it allows Honeywell to retain good employees who want to continue their education, making them even more valuable to the organization.

Contact: Katie Pierson, Honeywell, 612/870-5844.

Articles

"Christensen Expresses Concern about PBS Underfunding," Broadcasting, June 11, 1984, p.75. Predictions by the president of PBS concerning the impact of CPB budget cuts on public broadcasting.

"FCC Released Text of ITFS Interim Rulings," ETV Newsletter, June 25, 1984, pp.2-3. An explanation of the FCC's interim rulings on ITFS concerning the grandfathering of license transfers.

Mastroberardino, Joy. "PTV Stations Examining Contracts for Lease of VBIs," Current, June 12, 1984, pp.1,7. A report on agreements between PBS and the Satellite Network Delivery Corporation and several public broadcasting stations to provide data delivery on their vertical blanking intervals.

Mermigas, Diane. "ABC Offers Standards Guide," Advertising Age, June 25, 1984, p.82. An announcement of the release of a primer on guidelines used by the networks in deciding what sexually-oriented dialog is permissible on TV.

Spaedy, Kerry. "TVs Equipped for Stereo Sound Make Debuts at Summer CES," Multichannel News, June 11, 1984, p.52. A report on the introduction of new television sets capable of stereo sound at the Consumer Electronics Show.

Cable Television

Articles

"Cable TV: Politics Cloud Cable's Outlook," Advertising Age, May 31, 1984, pp.19-24. An overview of the cable industry and why it has not progressed as promised.

"Encyclopaedia Britannica Signs with College Cable Co-op," Central Times, June 14, 1984, p.1. An announcement of the first 52-hour program package for Central Educational Network's College Cable Co-op.

Norton, Perry. "Dow Jones' Cable Experiment," InfoWorld, July 16, 1984, p.35. A report on Dow Jones News/Retrieval, a new electronic service now available to more than 40,000 customers of American Cablesystems.

"Supreme Court Limits States' Rights to Regulate Cable," Broadcasting, June 25, 1984, pp. 27-29. A discussion of a recent Supreme Court ruling that supports federal regulation of cable and may affect the future of national cable TV legislation.

Van Eaton, Joe. "Viewership of Programming Shows Promise," Video Manager, June 1984, p.23. A look at recent viewership surveys of community access channels shows strong interest in community programming.

Books

The Reshaping of an Innovation, 1970-1982. Appalachian Community Service Network, 1200 New Hampshire Avenue, Washington, DC 20036. 1982. 370pp.

A report documenting the evolution of ACSN from an educational experiment to a national satellite program service.

Satellites

Articles

"FCC Preempts Inconsistent State and Local Regulation of SMATV Systems," Satellite Communications, June 1984, pp.25-26. An evaluation of the FCC ruling that supports master antenna systems' unhindered interstate operations.

"FCC Takes Up a Number of Satellite Issues Aimed at Making Market More Competitive," Communications News, June 1984, p.34. An overview of FCC actions concerning the U.S. role in international satellite networks.

"New Productions for Hospital Satellite Network," ETV Newsletter, June 11, 1984, p.5. A description of two new series being developed as continuing education programs for nurses.

"USCI Screams for More Support," CableVision, June 25, 1984, p.39. A report on the financial difficulties of the nation's first DBS service.

Books

Communication Satellites in the Geostationary Orbit. Donald Jansky, and Michel Jeruchim. Artech House, 610 Washington Street, Dedham, MA 02026. 1983. 550pp. $60.

A detailed examination of the technical and political factors that will determine the future of satellite communications.

Teleconferencing

Articles

"Government Video Use May Rise as Result of House Bill," Telecoms, June 1984, p.7. A report on a bill to provide the National Telecommunications and Information Agency with money to conduct a feasibility study on conducting videoconferencing between the U.S. and NATO allies.

Kolyer, Diane. "A Baby Bell Takes a Big Video Meeting," Videography, June 1984, pp.24-26. A description of Southwestern Bell's videoconferencing event aimed at uniting their employees.

"Videoconferencing Guide," Videography, June 1984, pp.28-30. A comphrehensive listing of companies that offer services and hardware for videoconferencing.

Books

Teleconferencing: Maximizing Human Potential. Robert Cowan. Reston Publishing Company, Inc., 11480 Sunset Hills Road, Reston, VA 22090. 1984. 288pp. $23.95.

This book explores full motion video, audio only, audiographic, slow scan, and videographic conferencing to discuss the best uses of each technology.

Teleconferencing Technology and Applications. Christine Olgren, and Lorne Parker. Artech House, 610 Washington Street, Dedham, MA 02026. 1983. 350pp. $45.

A compilation of case studies of over 25 organizations using teleconferencing with a lengthy bibliography and extensive glossary.

Videodisc

Articles

"Library of Congress Opens Videodisc Program," ETV Newsletter, June 25, 1984, p.5. A description of the first videodisc available to visitors of the Library of Congress.

"Of Cars and Copiers: Toyota and Minolta Launch Disc/Tape Networks," The Videodisc Monitor, June 1984, p.1. An announcement of Toyota and Min-

olta's plans to separately establish disc and tape networks for employee training.

Pennsylvania Department of Education Videodisc Project," Videodisc and Optical Disk, May/June 1984, p.243. A profile of a program for K-12 teachers on instructional television courses.

Reigeluth, Charles, and Garfield, Joanne. "Using Videodiscs in Instruction: Realizing Their Potential Through Instructional Design," Videodisc and Optical Disk, May/June 1984, pp. 199-215. An examination of the state of the art in instructional theory and its potential use in videodisc development.

Steinbicker, W.J. "Walking with the Disc," Video Manager, June 1984, p.24. An overview of the laser video disc.

Videotape

Programs

Annenberg/CPB Announce Video Courses Available This Fall

Five telecourses designed to expand undergraduate curriculum opportunities and provide new supplemental resources are now available for colleges and universities nationwide. Each course combines television with texts, study guide, and other print materials to provide interesting and challanging course material.

The courses will be broadcast on public television. The Brain introduces basic principles of brain science and analyzes recent research. The Write Course: An Introduction to College Composition is a freshman English course taught from a "process" point of view. The New Literacy: An Introduction to Computers provides an overview of the computer: what it is, how it operates, what it can and cannot do. The Constitution: That Delicate Balance examines the Constitution in light of pressing current issues. Congress: We The People presents a framework for understanding concepts by which Congress works.

More detailed information about use of these intial courses from the Annenberg/CPB Project during the coming academic year is available. Contact: Hilda Moskowitz, CPB, 1-800-LEARNER.

Articles

"Educational Video Productions for Classroom Use," Media & Methods, May/June 1984, p.20. Two historical videotapes available for educators.

"Telefirst a Big Tele-failure," CableVision, June 25, 1984, p.14. A report on ABC Video Enterprises' decision to stop its in-home recording experiment.

"Who Has Largest Enrollment for TV Courses?" ETV Newsletter, June 11, 1984, p.3. A disclosure of the University of South Florida's yearly telecourse enrollments, 6,000.

Videotex/Teletext

Programs

Electronic Text Consortium Formed

San Diego State University, University of Wisconsin-Extension, University of Nebraska, and WGBH-TV, Boston have joined forces under an Annenberg/CPB grant of more than one million dollars to explore videotex applications in higher education. The four institutions formed the Electronic Text Consortium in March 1984 and have undertaken different projects to determine the cost effectiveness and practicality of electronic text use in instructional settings.

San Diego State and WHA-TV (UW-Extension) will be working jointly to

develop a series of electronic text packages to support the upcoming PBS series, "Congress: We The People." KUON-TV, University of Nebraska-Lincoln will develop and deliver an independent study course "Introduction to Marketing" which will utilize videotex/microcomputers and correspondence for delivery. WGBH Educational Foundation will produce a math skills study package deliverable on one or more videotex systems.

Contact: John Witherspoon, Electronic Text Consortium, 619/265-6933.

Articles

Dukes, Anne. "Cox Sees Cable Videotex Becoming Viable in '86 or '87," Multichannel News, June 4, 1984, p.69. A report on the cable-delivered videotex, Enhanced Cable Services, which is lagging behind its telephone-delivered counterparts.

Gelman, Morrie. "Times Mirror to Initiate Second Videotex Service," Electronic Media, June 7, 1984, p.24. An announcement of Gateway, a new commercial, two-way home videotex service.

"Seven PTV Stations Signed Up with Teletext Delivery Service," ETV Newsletter, June 25, 1984, p.3. A update on the number of public broadcasters planning to carry Satellite Network Delivery's teletext service over their vertical blanking interval.

Toronto Community Videotex," Video Guide, May 1984, p.11. A profile of a nonprofit corporation devoted to providing access and training to videotex technology.

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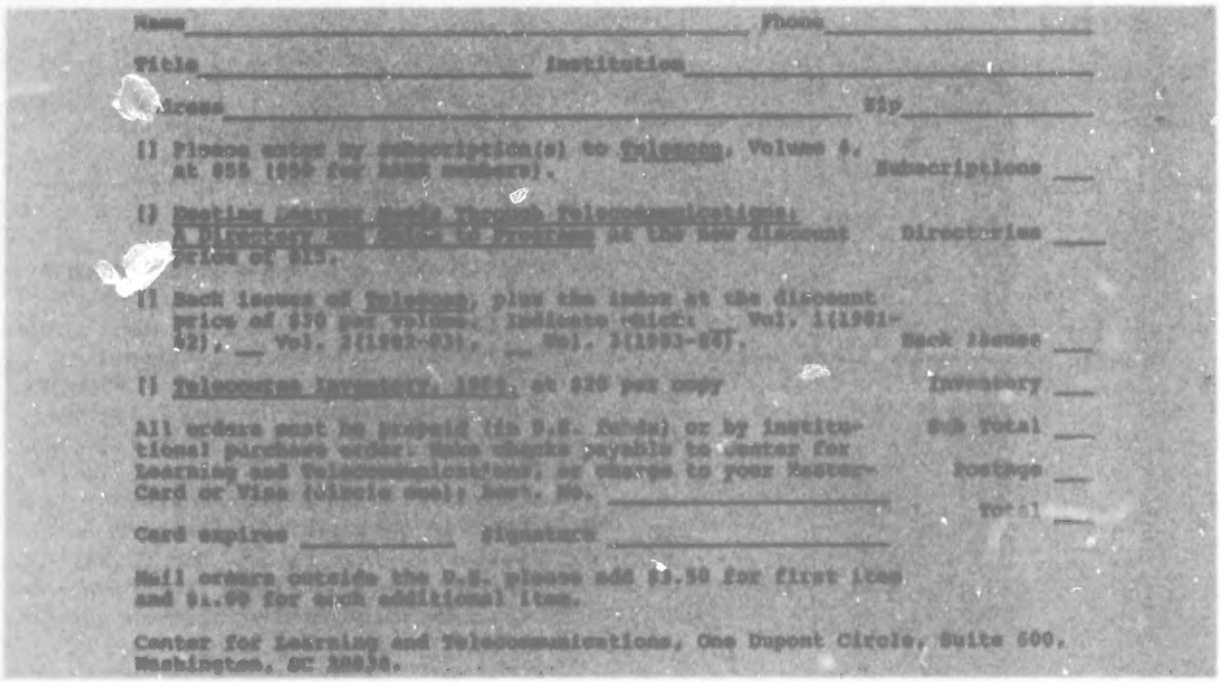

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MACROSCAN

Articles, books, programs, and projects involving the uses of combined technologies.

Programs

AECT Releases Final Report on Status of Media Centers in Higher Education

Media centers at public colleges and universities appear to have suffered serious budgeting and personnel cutbacks during the period from 1977 to 1983, while reductions at private institution media centers appear to have been less severe. This is the finding of a study recently released by the Association for Educational Communications and Technology (AECT).

The AECT task force studied trends in budgeting, staffing, program support, and services at 196 institutions representing all levels of higher education.

Among other task force findings were:

- Forty-three percent of the repondents at public and 30 percent of those at private institutions reported no budgetary growth between 1977-78 and 1982-83.
- Less than 15 percent of the respondents reported receiving grants for off-campus sources in 1982-83.
- Thirty-five percent of the private institution media centers had just one full-time employee in 1982-83, and 13 percent had none.

Copies of the 94-page final report may be obtained for $10 each from Lynn Milet, Media Center, Linderman Library 30, Lehigh University, Bethlehem, PA 18015.

Articles

"Computers & Conferencing as Analytical, Graphics Tool," Telcoms, June 1984, pp.11-12. A report on computer and videotex use in audioconferencing.

"Computergraphics: Adventures in Animation," Audio-Visual Communications, June 1984, pp.36,41,87. A description of the production houses creating computer graphics for television.

Pearl, Jayne. "The Software Channel," Forbes, June 18, 1984, pp.157-58. A look at the Nabu Network and its success at bridging cable and computer technologies.

Books

Telecommunications: An Interdisciplinary Text. Leonard Lewin. Artech House, 610 Washington Street, Dedham, MA 02026 1984. 500 pp. $55.

A sequel to Telecommunications: An Interdisciplinary Text, this book gathers widely recognized technical and policy experts to give the most current overview of the state of telecommunications policy in such areas as telephone systems, data transmissions, and local area networks.

Futures: The Effects of Emerging Communications Technologies upon Education. Alexander Schure. Eric Document Reproduction Service, P.O.Box 190, Arlington, VA, 22210. 1983. 45pp. $3.90.

A paper presented at the ED-COMPCON-83 Conference addressing the future impacts of the computer upon engineering education.

COMPUSCAN

Articles, books, programs, and projects involving the uses of computer technologies.

Computers

Programs

University of Michigan Business School Plans Computer Network

The University of Michigan's Graduate School of Business Administration and Burroughs Corporation are working jointly to form a computer network to be operational at the Business School by September 1984. The purpose of this work is to create a computerized environment for academic and adminstrative work. The system will be used by the schools' 2,000 students, staff, and over 4,500 business executives who participate in its management program.

Approximately 350 work stations will be interfaced with the university's two existing computer networks for instructional research. The micro-computers and compact mainframes are designed to run multiple operating systems. Communication capabilities are also built into the design that allow hundreds of these computers to be connected into their own network.

Contact: Charles Kenny, Graduate School of Business Administration, 313/763- 6614.

U-WI Extension Will Study Computer Conferencing

CPB has initiated a feasibility study on electronic mail and computer conferencing for public broadcasters through the University of Wisconsin-Extension to determine whether this technology can help public broadcasters increase their informal communication on problems and solutions.

The study will explore the facilities, the hardware and software of the conferencing system itself, and the terminals through which the system is contacted; and the people involved, their degree of commitment, their comfort in using the system, their literacy in a new medium, and their knowledge.

Although many public broadcasting organizations are conducting technological research and development, information and results may not be adequately shared throughout the public broadcasting community. The recent emergence of electronic mail and conferencing systems could possibly fill this need. If the feasibility study shows potential for a successful demonstration project, then CPB will help stations establish a computer conferencing network.

Contact: Laura Ginzburg, CPB, 202/293-6160.

Articles

Bergheim, Kim. "Lasers Enhance Mass Storage," InfoWorld, June 25, 1984, pp.40-45. An examination of optical disk storage of computer software that uses laser beams to record and read information.

Caruso, Diane. "Grass-Roots Telecommunication," InfoWorld, June 18, 1984, pp.34-36. A report on special-interest groups linking up via electronic bulletin boards and networks.

Fary, Barbara. "Computer Literacy for Staff Development," AEDS Journal, Summer 1984, pp.1-8. A discussion of the issue of computer literacy: a clarification of the term and scope of courses available to assist computer literacy.

Freeman, Raoul. "Definition and

Evaluation of Computer Support Systems for Instruction," AEDS Journal, Summer 1984, pp.46-55. A description of a methodology that links and evaluates instructional objectives to CAI software.

Hewitt, Doran. "Whither Electronic Mail?" InfoWorld, July 2, 1984, pp.28-29. A look at electronic mail: its meaning, drawbacks, and possibilities.

Kennedy, Patricia. "Teaching Software Selection and Evaluation to Education Majors," Collegiate Microcomputer, May 1984, pp.159-61. A description of the goals, activites, and outcomes of a university course to teach educators about software selection and evaluation.

Esch, Harold, and McMillen, Jack. "Microcomputers in Undergraduate Physiology Laboratories," Collegiate Microcomputer, May 1984, pp.151-56. A report on using a computer as strip chart replacement in a physiology lab.

Lindauer, Barbara, and Bruemmer, Lawrence. "Robotics: Training Challenge of the 1980's?" Performance & Instruction Journal, May 1984, pp. 15-17. A look at the potential effects of the use of robots in industry training.

Mace, Scot. "Drexel U. Meets the Macintosh," InfoWorld, June 4, 1984, pp. 24-28. A report on the requirement by Drexel University (Pa.) that every student use a computer in classwork.

Merrill, M. David, and Wood, Larry. "Computer Guided Instructional Design," Journal of Computer-Based Instruction, Spring 1984, pp. 60-63. A description of the Lesson Design System, a computer guided instructional design system written in Pascal for the Apple computer.

"Pepperdine's 'Electronic Campus' Taking Computer Literacy Course," Communications News, June 1984, pp.74-75. An overview of Pepperdine University's (Cal.)progress in moving into the information age.

Ross, Steven. "Matching the Lesson to the Student: Alternative Adaptive Designs for Individualized Learning Systems," Journal of Computer-Based Instruction, Spring 1984, pp.42-48. A look at eight studies dealing with the teaching of statistical concepts through computer-managed instruction.

Books

Computers & Learning: A Compendium of Papers. Alfred Bork. Eric Document Reproduction Service, P.O.Box 190, Arlington, VA 22210. 1983. 167pp. $12.65.

A compilation of 15 papers covering computers and learning including information about: computer-assisted instruction, interactive learning, and computer graphics.

Interactive

Articles

Gayeski, Diane, and Williams, David. "Interactive Video Accessible and Intelligent," E&ITV, June 1984, pp.31-32. An examination of how interactive video can be simple, yet effective.

"Interactive Television Association Conference," The Videodisc Monitor, June 1984, pp.12-13. A series of quotes from ITVA industry leaders concerning the recent ITVA conference.

"Interactive Videodisc Courseware Development Guide," ETV Newsletter, June 25, 1984, p.5. An announcement of a guide now available to assist businesses to develop specific videodisc-based courseware.

What's Happening in Videodiscs," E&ITV. June 1984, pp.48-55. A discussion of recent projects involving all levels of interactive videodiscs.

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Advertising Age. Crain Communications, 740 Rush Street, Chicago, IL 60611.
Audio-Visual Communications. United Business Publications, Inc., 475 Park Avenue, South, New York, NY 10016.
Broadcasting. Broadcasting Publications, Inc., 1735 DeSales Street, NW, Washington, DC 20036.
CableVision. Titsch Communications, 101 Park Avenue, New York, NY 10178.
Central Times. Central Educational Network, 4300 W. Peterson Avenue, Chicago, IL 60646.
Communications News. Harcourt Brace Jovanovich, Inc., 124 First Street, Geneva, IL 60134.
Current. Current Publishing Committee, Box 53358, Washington, DC 20009.
E&ITV. Charles S. Tepfer Publishing, Inc., 51 Sugar Hollow Road, Danbury, CT 06180.
Electronic Media. Crain Communications, 740 Rush Street, Chicago, IL. 60611.
ETV Newsletter. Charles S. Tepfer Publishing, Inc., 51 Sugar Hollow Road, Danbury, CT 06180
Forbes. Forbes, Inc., 60 Fifth Avenue, New York, NY 10020.
InfoWorld. Popular Computing, Inc., 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025.
Journal of Computer-Based Instruction. The Association for the Development of Computer-Based Instructional Systems, Miller Hall 409, Western Washington University, Bellingham, WA 98225.
Media & Methods. American Society of Educators, 1511 Walnut Street, Philadelphia, PA 19102.
Multichannel News. Fairchild Publishing, 300 South Jackson, Denver, Co 80209.
Performance & Instruction Journal. National Society for Performance & Instruction, 1126 16th Street, NW, Washington, DC 20036.
Satellite Communications. Cardiff Publications, 6430 South Yosemite Street, Englewood, CO 80111.
Telecommuications Alert. Management Telecommunications Publishing, One Park Avenue, New York, NY 10016.
Telecoms. University of Wisconsin-Extension, Lowell Hall, 610 Langdon Street, Madison, WI 53703.
The Videodisc Monitor. Videodisc Services, Inc., Box 6302, Arlington, VA 22006.
Videodisc and Optical Disk. Microform Review, Inc., 520 Riverside Avenue, Westport, CT 06880.
Videography. United Business Publications, Inc., 475 Park Avenue, South, New York, NY 10016.
Video Guide. Satellite Video Exchange Society, 261 Powell Street, Vancouver, British Columbia, Canada.
Video Manager. Knowledge Industry Publications, Inc., 701 Westchester Avenue, White Plains, NY 10604.

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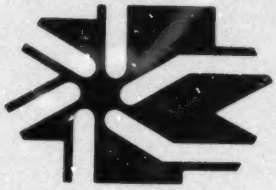
The Digest of the Center for Learning and Telecommunications VOLUME 3 ISSUES 1-7 1983-84



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This index covers Volume 3, Issues 1-7, from September 1983 through August 1984. An index to Volumes 1 & 2 is also available. Back issues of TELESCAN, including the index, may be ordered for $30 for each volume. Add $1.50 per set postage for orders outside the U.S. Copies of the index only are available for $7.50 each.

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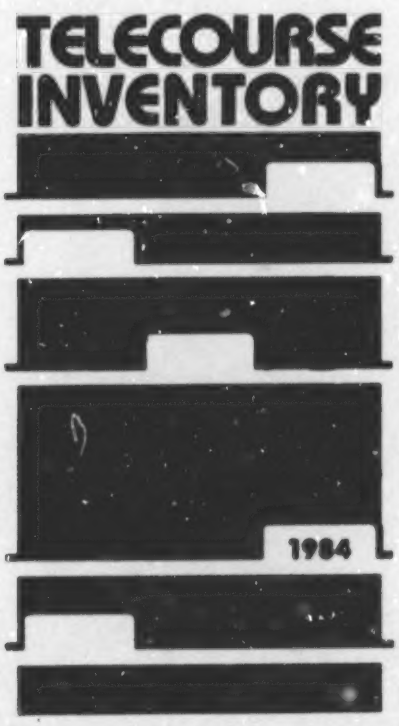

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